This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

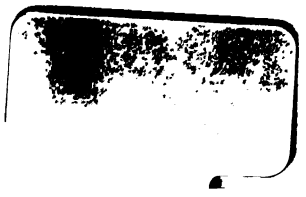
Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

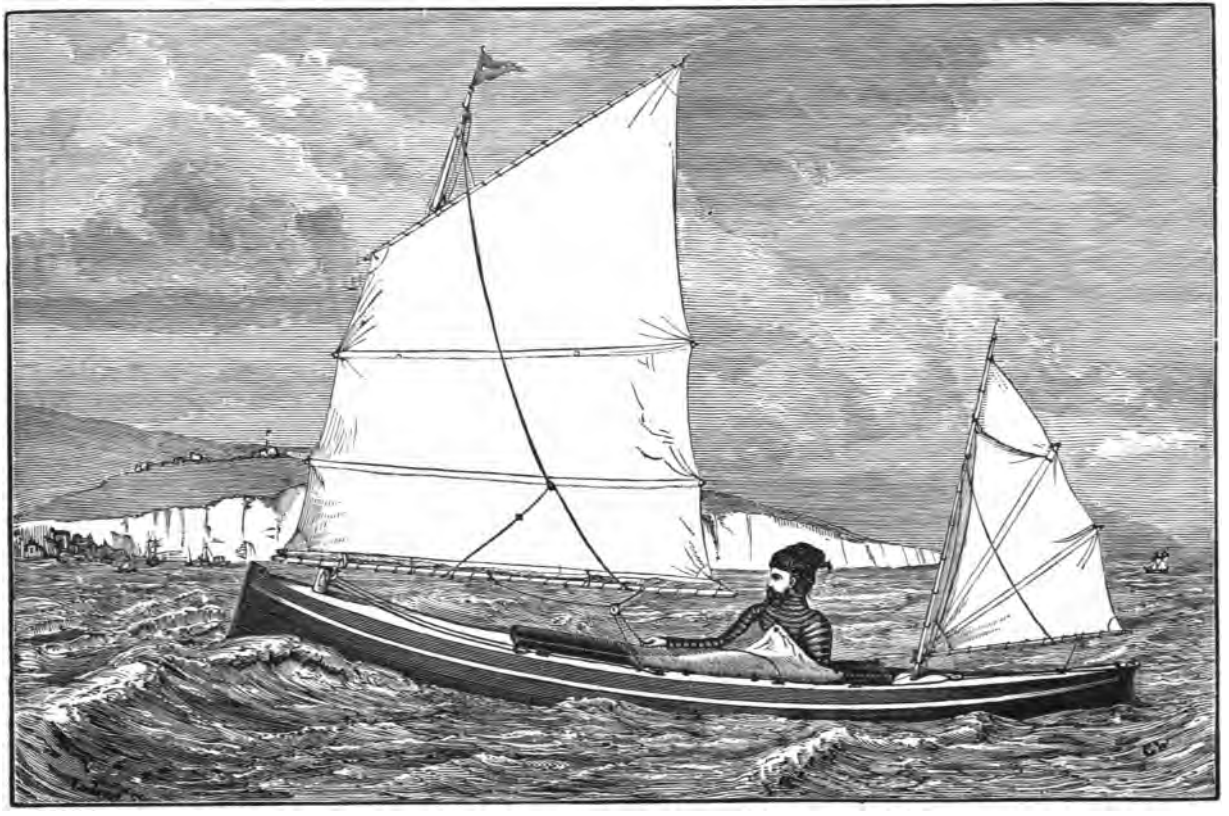
PRACTICAL CANOEING

BY

"TIPHYS"

600076432S





CLOSEHAULED ON A FRESHENING BREEZE.

PRACTICAL CANOEING;

A TREATISE

ON THE

MANAGEMENT & HANDLING

OF

CANOES.

By "TIPHYS."

"FORWARD."

London:

NORIE & WILSON,

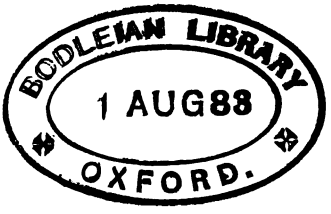
NAVIGATION WAREHOUSE AND NAVAL ACADEMY,

156, MINORIES, E.C.

1883.

Entered at Stationers' Hall.

268. a. 143.



FULL PAGE ILLUSTRATIONS.

CANOE SAILING - - - - - - - - - - - FRONTISPIECE.

PAGE.

WORKING LUG SAIL - - - - - - - - - - - - - 21

BALANCE LUG SAIL - - - - - - - - - - - - - 27

BATSWING SLIDING GUNTER - - - - - - - - - - - 35

IMPROVED SLIDING GUNTER - - - - - - - - - - 39

LONDON: PRINTED BY RICHARD BARHAM, QUEENHITHE, E.C.

CONTENTS.

CHAPTER I.

CANOEING CONSIDERED AS A SPORT.

CHAPTER II.

OF THE HULL OF A CANOE.

CHAPTER III.

ON FITTINGS CONNECTED WITH THE HULL.

CHAPTER IV.

SAILS—THE WORKING LUG—THE BALANCE LUG.

CHAPTER V.

THE BATSWING SLIDING GUNTER—ON DECK FITTINGS.

CHAPTER VI.

MANAGEMENT—SEAMANSHIP.

CHAPTER VII.

LIVING ACCOMMODATION—TENTS.

CHAPTER VIII.

ON DRESS—GENERAL ADVICE.

APPENDIX.

EXPLANATION OF TERMS—DESIDERATA—RACING—THAMES WEIRS.

PREFACE.

THIS little Book is intended to meet the wants of those who are taking up Canoeing for the first time, or who having Canoes, wish to fit them out for cruising. I have almost entirely avoided the subject of building, thinking it undesirable that beginners should attempt to build for themselves, which is likely to lead to disappointment With very few exceptions, nothing is recommended which has not stood practical trial.

To the "Elder Brethren" of the paddle, if any such should be among my readers, I must apologise for stating positively some few things which may be regarded as debateable. It is impossible in a small compass to guard every statement by an "in my opinion." I have, however, endeavoured as far as possible to distinguish between my own views and those of others, and, where mine diverge from those generally accepted, have given my reasons as far as space would allow.

Wherever I have quoted the writings, or inventions of other Canoeists, I have endeavoured to acknowledge it. If in any case I have failed to do so, let it be ascribed to inadvertence, or to the fact that the same thing is often invented simultaneously by more than one person My obligations to correspondents have been acknowledged in the text, except in a very few cases, in which silence on this point has been requested.

PRACTICAL CANOEING.

CHAPTER I.

CANOEING is one of the earliest of human inventions, and one of the most simple, inexpensive, and enjoyable amusements of the present time. No doubt by giving way to the modern tendency to make a canoe a kind of toy yacht, capable of nothing but what a twenty foot sloop could do more effectually, one may make jettison of cheapness and simplicity, and introduce an amount of difficulty and trouble which is fatal to enjoyment.

But, if this snare is avoided, nothing can beat the canoe. One day paddling among the lilies, perhaps in a stream too narrow for oars; on another spreading white sails to the sea breeze, and safely contending with the waves; now carried over obstacles, now housed in boat-house or shed, in a room of the inn, or in fact anywhere that there is room to swing the traditional cat; and again at anchor in the tide, or hauled up on beach or grass, she is herself the nightly home of her crew.

"But if canoeing has all these virtues," one is often asked, "how do you explain the fact that it is less practised now than formerly?" I will endeavour very shortly to answer this.

It is the fate of many pastimes to "die of their own too much." Comparatively simple at their first introduction, they are practised with success by the numbers whom their novelty

attracts. After a short time improvements, some real, some nominal only, are introduced, which add to the difficulty, and often to the expense, of the pursuit. This, occurring just as the effect of novelty has died out, goes far to reduce the numbers of those who practice the pastime in question to a few enthusiasts, the old hands finding themselves left behind by the "march of events," while outsiders are deterred from "taking a hand in the game," by the difficulties which have been introduced.

This has been to a very great extent the case with canoeing in England. At its introduction nothing was more simple. Even those who could not row found that the management of a canoe was within their power, and in it acquired at ease sufficient watermanship for ordinary purposes.

Then improvements began; in a short time it was found that sails would nearly double the travelling power of a canoe, and enable her to accomplish journeys in a day which would be hardly possible with the paddle, except to a man of extraordinary strength and endurance. For example, 120 miles have been travelled in a day and a night by a canoe under sail, a distance which few men would care to attempt "at a sitting" with a paddle. Sailing races were the next step in the progress of canoeing, and in a short time it was evident that whatever canoes might have gained by the results of time and experience, they were beginning to lose that simplicity which was their chief advantage at starting.

The three principal canoeing stations in the Kingdom are the Clyde, the Mersey, and the Thames. On the Mersey, local circumstances, and the wise regulations of the Club, have preserved the best qualities of a canoe, in portability, economy, and simplicity, though probably at some loss of efficiency for sailing. On the Thames, the use of separate classes for paddling and sailing, and lately, the removal of the Club Sailing Races to waters where no amount of weight is any disadvantage, have produced a paddling machine and a sailing machine, neither of which possesses the "points" of a canoe. On the Clyde a balance appears to have been struck between the other two,

though perhaps with some tendency to sacrifice general usefulness to sailing.

At present the extraordinary skill of some few canoeists, and the no less marvellous complexity of the rigs in which they indulge, with impunity, through their skill, and even with advantage for racing purposes, have led most people to suppose that canoeing, except in its most elementary form of paddling, is something quite beyond the powers of ordinary human beings.

It is the object of the present writer to show that canoeing is not, or at all events need not be, so difficult an art, and to endeavour to select from the numerous inventions of the time those which may advantageously be adopted for general purposes, or by a beginner in the art.

In the first place as to difficulty. I cannot quite say, "There is none," but certainly there is or need be, very little. Anyone can paddle a canoe at the first attempt, and in two days, can learn to paddle *well* and neatly, though to paddle long or fast requires practice. But for real canoe cruising, one must be able to sail as well. "Surely a man must be a first rate sailor before he can handle such a craft as a canoe under sail?" "Not by any means," is the answer, and the proof is that in several cases I have known people who had never sailed any craft before, sail a canoe very fairly indeed after half an hour's explanation on shore, and a couple of afternoons' coaching afloat.

Of course, the niceties of sailing can not be appreciated in that time, but it is enough for a man of ordinary activity, and not frightened of water, to learn to handle a canoe sufficiently well to make one of the party in a cruise, during which, of course, he will be continually adding to his skill and experience. I will even go so far as to say, that the canoe is the best craft in which to learn sailing. The "Una" boats, which are commonly used for learning in, have the disadvantage that they will sail a little even when the sail is trimmed perfectly wrong, while the canoe must be sailed rightly or not at all. Also the main and mizen rig is much more instructive as to the turning effect of sails than any one-sail rig. A canoe has also the advantage, for this

purpose, that if things go wrong, the paddle is always at hand to extricate her from difficulties.

It may be of interest to describe the means by which a man may so quickly acquire the first elements of sailing a canoe, and having instructed several people, including one or two ladies, I think my method cannot be far wrong. First, of course, the beginner should learn to paddle the canoe, with double and with single paddle, and to steer with foot-gear or lines, preferably the former. The next thing is to explain the general principle of the thing, how the sheets must be eased off before the wind, and hauled flat when close-hauled, etc., which may well be done by a sketch or two, or with the sails of a model. The next thing is to go on board, and in as steady a wind as may be, to start on a reach. The mizen should be small, so as to be safely neglected in a puff, or in altering the course, and if the canoe carries centre-boards, they should be made fixtures of for the time.

The instructor should sail or paddle alongside to leeward, and explain the management of the sheet, and how it may be eased in a puff. Then luff a little, and as the sails shake haul them flat, and notice that if they shake after that the helm must be put up a trifle. As soon as a clean full-and-by is attained, it is time to try staying, for which the usual instructions should be given. Then take the wind a little free or quartering. The sheet can no longer be eased for puffs, so the use of the down-haul should be shown. If there is any strength in the wind this point of sailing should not be attempted the first day. The next and hardest lesson is running before the wind, and to do this without a jibe often takes as much learning as all the rest of sailing. Perhaps in this the use of a vane or burgee might be allowed, but generally speaking, in learning to sail, no such aid should be permitted, especially when close-hauled, or it will lead to a habit of depending on the flag, which is fatal to good sailing, and will be found very objectionable when night sailing is attempted.

CHAPTER I.—NOTES TO.

ROYAL CANOE CLUB.

DEFINITION.—The definition of a canoe is, "a vessel with or without sails capable of being propelled with a paddle or paddles by one or more persons, who face forwards according to the number that it is intended to carry."

Each canoe shall contain one man only, unless the notice of any race otherwise provides.

CLASSES FOR PADDLING.—1st Class.—Any canoe.

2nd Class (*Ringleader*).—Clincher-built, of any material, decked with wood; greatest length not more than 18 feet, greatest beam not less than 24 inches.

3rd Class (*Rob Roy*).—Clincher-built, of any material, decked with wood; greatest length not more than 15 feet, greatest beam not less than 26 inches.

CLASSES FOR SAILING.—1st Class.—Any material and build; greatest length over all, from stem to stern post, not more than 20 feet, with a limit beam of 2 feet; but the beam may be increased by 1½ inches for each whole foot of length decreased; greatest depth at fore end of well under the centre of the deck to the garboards, not more than 16 inches. Fixed keel of wood, not more than 2 inches deep, including metal band, which must not exceed one-half of an inch deep.

NOTE.—A competitor is allowed to use either a drop or deep keel.

The greatest depth allowed in drop or deep keels is 18 inches beyond the fixed keel; but when hauled up they must be completely housed within the canoe. Centre-boards not to exceed ⅝ inch in thickness.

All ballast, except centre-boards, shiftable during a race, shall be carried within the canoe, and no fixed ballast shall be carried below the keel-band: all ballast on board at starting shall be carried during the race.

2ND CLASS CRUISING CANOES.—Canoes in this class shall not exceed the following limits, namely: beam, 30 inches; depth from underside of deck to garboard streak, 16 inches; keels and centre-boards as in 1st Class. Weight of canoe, including all spars, gear, fittings, and ballast, not over 150 lbs. (This Class is not used in racing.)

In neither Class is there any restriction as to material or mode of building, or as to nature of ballast, rig, sails, or rudder.

CLYDE CANOE CLUB.

DEFINITION.—"A canoe shall be a decked boat containing one man only."

CLASSIFICATION.—Sailing canoes shall not exceed 17 feet 6 inches length, × 36 inches beam, × 18 inches depth (inside), nor be less than 28 inches beam, × 10 inches depth.

Cruising canoes, maximum 17 feet 6 inches, × 32 inches, × 13 inches; minimum 27 inches, × 8 inches.

Paddling canoes, maximum 17 feet 6 inches, × 32 inches, × 12 inches; minimum 22 inches, × 6 inches.

(Thus allowing a canoe 17 feet 6 inches, or less, × 32 inches, × 12 inches, to compete on fair terms in all classes.)

Keels limited to 2½ inches. No centre-boards allowed.

MERSEY CANOE CLUB.

DEFINITION.—"A decked boat not exceeding 20 feet in length, or 30 inches in beam. Means of propulsion, paddle or sails only. No centre-boards. Keel 2 inches."

1st Class.—Clincher or carvel built, of wood, decked with wood, greatest length not more than 18 feet, maximum beam 27 inches, minimum 26 inches.

2nd Class.—Maximum beam, 30 in.; minimum, 27 in.; otherwise same as Class 1.

(These Classes are for paddling and sailing. The 1st Class is the most used.)

CHAPTER II.

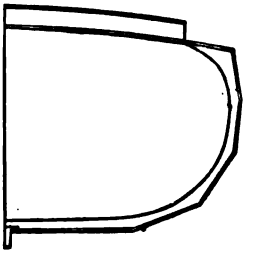
As to the canoe herself, unless a second-hand one can be found that thoroughly satisfies the following conditions, it is far and away better to build. The difference of cost is not great, and the difference in use and comfort between a canoe that is right and a canoe that is wrong is immense.

Of course good materials and work are indispensable, and if a canoe is to be sold it is often because she is a failure in some of these points. Next, stability; a boat or yacht of almost any form may be rendered fairly stiff by ballast, but a canoe must either be entirely without ballast, or must use it in such small quantities that its effect on stability need hardly be considered.

As a canoe is not only intended to carry her crew, but a certain amount of luggage, etc., amounting perhaps to a cwt., she may very likely be out of fore-and-aft trim when without luggage, and also may be a trifle too light, not down to her bearings, and not carry headway enough in tacking. For this reason I would allow a small quantity of ballast, but if I were drawing up rules for sailing canoe races, I would allow only some three-quarters of a cwt., and that should be water, or nothing heavier. If lead is allowed, canoes will be built that require lead, and the result is, that when laden with luggage, they are obliged to carry a quantity of lead as well, which of course destroys their value for cruising purposes.

Stability, therefore, must be had independently of ballast, and the only means by which this can be done is by having a flat bottom to the canoe throughout a great part of her length, and extending to more than half her breadth amidships. By this means, without sacrificing too much fineness of ends, a light canoe, say 30 inches beam, may be made so stiff that a 12 stone

man can sit on the gunwale without upsetting her. The sketch shows the form of middle body with which this result has been attained. This allows of moving about, standing up, etc., in the canoe, and gives a broad floor for sleeping on. Another important element of stability is beam. Of this I would not have more than 30 or less than 27 inches. A greater amount adds to the weight, and if the weight is to be kept down, there must be a corresponding diminution of the other dimensions, length, and depth, beyond what is practically desirable. Length also adds something to stability, and greatly increases speed. It is therefore desirable to use every inch of length that can be had without making the boat too heavy, or too slow in turning. With regard to the first, length adds to the ease with which a boat can be hauled about, for instance a randan skiff weighing 3 cwt. is just as easily hauled ashore as a canoe of 2 cwt.



With regard to handiness in turning, if for very narrow waters, 14 feet will be as much as can be conveniently turned to windward, but for every purpose except the solitary one of quick staying, 16 or 17 feet will give a far better boat, especially in rough water.

Quick staying can be promoted by giving a judicious amount of camber; which, however, must not be allowed to appear in the flat of the floor, or the boat will be always running up hill, to the great detriment of her speed. Centre-boards also, especially if "worked" in going about, add enormously to staying power. I will go fully into this question further on, but for the present the dimensions of the canoe are under consideration. Of these, depth remains, which may be divided into draught, free-board, and round of deck. A flat floored canoe will naturally have a light draught, which is an advantage now and then in *very* shallow water, but generally nothing under 1 foot or 15 inches could be objected to as too deep. If a man can stand in the water beside

his floating canoe without wetting his trousers (turned up of course), she cannot be complained of on the score of depth. However, for a flat floored canoe, 6 inches, exclusive of false keel or centre-boards, is a fair average draught. The free-board, in such a canoe, may be about the same. Free-board is very valuable in sailing, making a sudden capsize less likely. A canoe with 3-inch free-board would have her coamings under water, and begin to fill, when one of 6 inches would hardly wet her deck. A canoe of good free-board would ship no water over her coamings, till inclined to such an angle that she would inevitably capsize even if fully decked. A reasonable amount of free-board is good for seaworthiness—a very low canoe being miserably wet under sail in broken water—and gives more room for stowage. Too much free-board interferes with paddling, and makes the craft topheavy. The rounding of the deck adds to its strength, and enables the boat to relieve herself quickly of the weight of the waves through which she may be driven, or which fall on board. From 2 to 3 inches above the gunwale will be about the mark.

Before leaving the hull and passing to that of fittings, it will be well to settle the question of centre-boards, as though of the nature of fittings, they cannot easily be added to a canoe not built for them. There are a lot of arguments for and against the use of a centre-board, but on the whole it seems advisable to fit them, but at the same time to give the canoe enough keel to hold a tolerable course without them when they jamb, or otherwise break down, as they are sure to do sooner or later. Half the evil of centre-boards, or any other complication in a canoe, is removed if the working of the vessel is not made to depend upon them. The usual arguments in favour of a centre-board as against a false keel of say 4 inches, which would be about equal in its effect to a centre-board 2 feet 6 inches long by 15 inches deep, is that the keel adds permanently to the draught. I do not value this argument much, as a draught of 10 inches is light enough for almost any conceivable purpose. A keel, however, of this depth will require to be greatly rounded up at the ends, or "rockered," an arrangement which is admirable for tacking and close-hauled

sailing, but which makes a boat very ticklish to steer on any other course, especially before the wind. Now on a cruise a boat which wants very delicate and continual steering, takes twice as much out of her crew as one that will steer a straight course with little attention, and for this reason, I give my vote for centre-board *v.* fixed keel for a canoe.* A canoe should have her centre-board well forward, say the after end of it forward of her midships; the advantages of which will be seen when we come to consider the working of a canoe under sail. If an after centre-board is also carried, the main centre-board may be placed still farther forward. There are some ingenious varieties of the centre-board which fold up fan-wise into the keel, thus avoiding the encumbrance of a centre-board case in the boat. I would advise to have nothing to do with them, as they are very liable to get jammed, are difficult to get at to set right, and again because the case of an ordinary centre-board need not be at all in the way of stowage, or of sleeping on board.

Thus much for the general design of the hull. As to its materials and manner of building, there is a good deal of variety of opinion. Oak, clinker built is the strongest, but too heavy for any but a very small canoe. Cedar is lightest, and strong enough except against rocks and stones, which cause it to tear up very badly. A combination of oak and cedar, the former up to a little above the water-line, and the latter above, is as good as anything. Mahogany is a little lighter than oak, and is very good for boat building. I have known a canoe of this material as good as new after 8 or 9 years' hard use, and after lying all the winter and spring in the weather, not leak a drop when launched.

Clinker build, like that of rowing boats, is most common for canoes, but many of the racing sailing canoes in the Royal Canoe Club are built, like the Canadian bass wood canoes, without overlapping the planks, a strip of wood running all along the join or "land" inside, to which both edges are secured.

* In a yacht the same arguments lead to a totally opposite conclusion.

Canvas canoes are also often built, generally by amateurs, and often answer exceedingly well.

Whatever the construction of a canoe, no iron whatever should be used in her unless galvanized.

CHAPTER III.

We next come to those parts of a canoe, which though properly belonging to the hull, can without much difficulty be fitted or altered at any time after the boat is built, and are, therefore, less important than the foregoing, to anyone buying or ordering a canoe. First, the well. This may be of any size or form, some being long, some short, some narrow, some nearly as wide as the canoe; and rectangular, oval, or "coffin shaped" in outline. A very short well is to be avoided, though it has a very neat appearance; some canoes have an almost circular well, extending only from just behind the man's back to over his knees. These, however, make stowage difficult, and sleeping on board even more so, while they quite prevent carrying a passenger. On the contrary a very long well weakens the deck and greatly interferes with neatness of appearance. I would carry the well forward from the backboard nearly to the stretcher say 2 feet 6 inches, and aft of the backboard, forming a locker, about 18 inches, making 4 feet in all, as a minimum, but another foot or so is all the better. With a 5 feet well the canoe can very well be used as a "double," the foremost sitter having his legs under the deck.

For sailing, the wider the well is at the seat, the better for sitting and leaning up to windward, and for comfort in moving about. On the other hand, in a low canoe, a wide well may lead to the lee coamings getting under water in a squall, which means

shipping a lot of water, and a probable upset. To avoid this, many sailing canoes are fitted with "side flaps" and a narrow well. The coamings and side deck are cut away for about a foot on each side of the seat, and the piece so removed is hinged to the gunwale, and held in position, as it was before cutting, by a spring. The lee one is of course closed, and the weather one opened in sailing: which can be done instantaneously without the smallest difficulty. The chief objections to them are that they weaken the boat just where strength is required for lifting and hauling about: that they require a quantity of ingenious fittings to keep the water from finding its way in, and that they are liable to get knocked off and carried away by any accident, leaving the canoe in a very perilous condition for sailing or for encountering rough water. Also they are in the way of the "lead" of one's strings on deck, and prevent carrying paddle or spars along the waterways. I should prefer a well made as wide as the whole boat, with flaps either of wood or of macintosh to cover the lee side of it for six inches or so. However, for a light canoe with a fair amount of freeboard, side flaps are unnecessary, as a wide well gives enough room to sit up fairly well to windward, while the lee coaming would not be under water till the boat was actually hove "keel out," and a capsize almost inevitable. Besides, a cruising canoe is not intended to be sailed down to her coamings, but should be so canvassed that in the true strength of the wind her lee gunwale is well out of water. A rectangular well, having the sides parallel, is bad for sailing, as the water that comes on the weather deck has no tendency to run off fore or aft. For this reason the widest part of the well should be at the seat. The after end should be square, or nearly so, and wide enough to sit in, if only in case of a passenger: the fore end may be narrower, and may even be brought to a point. An oval, or egg-shaped well, with the small end forwards, looks and answers admirably, and if made in one piece, with but one join, is immensely strong.

The covering of the well has exercised more of the ingenuity of canoeists than anything else about the craft. It would take

long to describe all the varieties, but most commonly a piece of waterproof material is nailed along its edges to strips of wood, which rest along the outside of the coamings, and are kept in place by a fillet, or by small wood or brass chocks on the decks. These, supported by an arched cane or piece of wood, are enough for rain, or in very small canoes ; but in a sailing canoe it is usual to have a flat wooden lid to the hatch, folding back with one or more hinges, the waterproof being merely used to prevent the water from coming through the hinges or under the sides of the lid. With a rectangular well the lid may be made to fold up very neatly in the fore end of it, out of sight, but in a tapering well, which is much better, this is impossible, and one must either put up with the trifling unsightliness of the lid overlapping the end of well when opened, or make provision for stowing it below. The same kind of coverings are suitable for the after end of well or "locker" as for the fore end.

To add to the safety of a canoe, by preventing her from sinking if filled, some 3 or 4 feet at each end of the craft is shut off by a watertight bulkhead, or is fitted with indiarubber air bags. Both these plans have their faults, watertight bulkheads are not always really tight, and air bags are liable to collapse, either gradually, from the effects of change of temperature, etc., or suddenly, from flaw or injury. And bulkheads, unless ventilated, are apt to cause rot, and if ventilated by openings their security is seriously diminished. Much the best plan, where the weight can be afforded, is to have a zinc air-chamber fitted in each end of the boat, with a light non-watertight bulkhead behind it, just to keep it in place, and protect it against the ends of spars, etc., when thrust below, without impeding the circulation of air, or the flow of any leakage from the ends to midships.

I have seen very good air-chambers made of thin wood, like a band-box, tacked over frames like a boat's timbers, covered with calico and varnished. They were as light as could be, and easily made.

A rudder is, I fear, a necessary evil in a canoe of any but the very smallest size, and even light paddling canoes are all the

better for one. If it were only for sailing, one might make shift to steer with a paddle, but the rudder is very useful in paddling also. It is not at all easy to guide, and turn a long narrow craft like a canoe without the leverage of oars, and thus, even for paddling it is best to have a rudder. To use it while paddling, and when sailing, to have both hands at liberty, it is necessary to steer with the feet. A revolving stretcher is fitted, and the rudder lines lead through holes in the deck, and are secured to its ends. Even a better plan is to avoid piercing the deck, and to attach the lines to an iron yoke on deck, rigidly connected with the revolving stretcher. If the canoeist has gone forward in the well for any purpose, and cannot get at the stretcher, a touch to the deck-yoke will keep the vessel from running off her course. If, however, the stretcher is in the well, and not under the deck, this latter plan cannot be used. The rudder lines may be small wire rope, or even *stout* bell wire, which is cheaper, and works well.

In case of breaking a rudder line, it is a good plan to lash a strong brass ring to one arm of the rudder yoke, into which the boat-hook may be inserted, and the canoe thus steered till the damage can be repaired. The rudder, however, is a great nuisance in backing astern, in hauling ashore, when aground, etc. Its evils can, however, be minimised by judicious fitting. A circular yoke, with a deep groove round it, to take the rudder lines, which meet and are fastened by a screw on the aft side of the yoke, allows the rudder to be controlled when backing, so as to steer for stern-way. It also gives more power over the rudder when "hard over," and is less liable than the ordinary yoke to catch in anything.

The rudder must be fitted so as to rise above the level of the keel on striking the ground, either on very long pintles, or on a pin. This secures it from damage, and allows of the blade of the rudder being made deeper than the keel of the boat, to the great advantage of the steering. An iron shoe, projecting from the keel of the boat under the fore part of the rudder, will prevent weeds, ropes, etc., from catching in it, and should never

be omitted. A line from the rudder, through a ring or sheave on the stern-post, is useful to lift the rudder in shoal water, or before hauling ashore.

This completes the catalogue of "fixtures," and we may now pass to the accessories of the canoe.

First and foremost in order of precedence and dignity, comes the paddle. It is the special feature of the canoe as distinguished from boats, and forms the badge of our canoe clubs.* I am sorry to have to admit that, as a means of propulsion, the paddle is vastly inferior to sculls, and that its inferiority increases with every ounce of weight and every inch of size. Even as compared with such miserable little sculls, 5 or 6 feet long, as can be worked in a small canoe, the paddle would be beaten by a mile in every three, though for a few yards it might hold its own. The paddle, however, has grand advantages. It is worked "facing forwards"—in the same seat as is occupied for sailing; it can be worked with the sails; and used in rough water when it would be impossible to scull a canoe, and also in waters too narrow for any sculls. When it is desired to rest, the paddler has only to lay down his paddle and lean back at his ease, while the sculler must leave his seat if in quest of an easy posture. Also, when paddling, the canoe can be completely battened down, which is not the case with sculls. It is sometimes thought advisable to have a little pair of sculls in addition to a paddle, and when any distance has to be travelled, especially in smooth water against stream, there is a good deal to be said for the practice. I will describe the method by which I have known it to be managed with the minimum of extra weight and gear, only premising that after trial I have quite given up sculls, chiefly because the use of them makes one get so little practice in paddling, that when the latter method of propulsion is necessary, the arms are unable to do their work either well or pleasantly.

The sculls were formed by adding a handle 2 feet 6 inches in length to each half of a jointed 7 feet paddle, the shaft and

* In some large "canoes," the occasional and not very successful use of a paddle apparently constitutes their sole claim to the title.

ferrules being fitted with square ends inside to prevent twisting. The blades were somewhat narrow for paddle blades. The row-locks were very small iron crutches, covered with leather, and pivoted in the ends of a 3-armed 9 inch outrigger. The two outer arms of this were bent downwards at the inner end, and dropped into brass-fitted holes in the side deck, while the middle and longest arm passed through the coaming and was secured with a wing-nut. They were very light as well as strong, and when detached, the 3 arms folding together, they could be stowed in very little space.

Whether the paddle is to be made into a pair of sculls or not, it is very desirable to have it jointed in the middle, both for stowage and that the halves may be used as single paddles if required. For this purpose one, or if much "carrying double" is intended, both halves of the paddle, should be provided with a neat turned handle to fit the ferrule of the joint. If used as single paddles without this addition, the edges of the brass both discolour and wound the hands. The jointed paddle also has the advantage that for paddling against wind the blades can be set at right angles to each other, thus feathering the blade that is out of water. This makes an immense difference against the wind, and the use of the paddle in this manner is easily learnt. It might be thought that using it sometimes thus and sometimes in the ordinary manner would lead to confusion, but in practice it does not appear to do so.

The shaft should be about $1\frac{1}{4}$ inch in diameter, and the blades about 18 inches long by $6\frac{1}{2}$ or 7 inches wide, with a very slight hollow or curve. Very broad spoon blades may do for racing, but for ordinary work they are unsuitable, being bulky, weak, and tiring to the arms. The total length of the paddle should be about three times the beam of the canoe. A good paddle should be made much of, and never parted with till a better one is obtained. I have a paddle now which has outlasted four canoes, or rather my ownership of them.

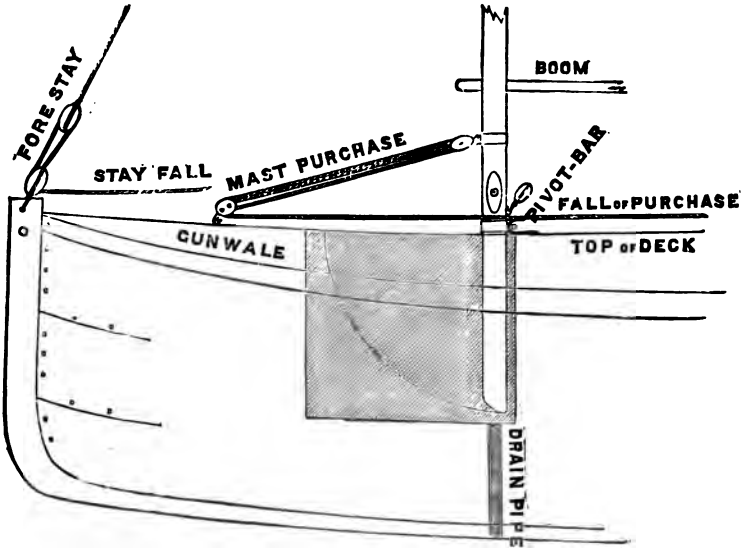
The paddle should be thrown well forward at each stroke, and the blade drawn sharply through the water, finishing

comparatively lightly. Just as in rowing, the first part of the stroke is of the greatest value, and too deep or jerky a finish wastes strength and makes the boat roll. One should try always to paddle long, however easily one may be taking it. For a spurt, one may lean forward and swing fore-and-aft a little, but ordinarily the body should be upright, supported by the back-board.

When masts began to be fitted to canoes they were almost invariably placed at the fore end of the well, close to the feet of the canoeist, and could thus be unstepped with the greatest ease. Very shortly, however, they were moved further forward, principally to allow the sail to pass clear of the man's body, an advantage which outweighed a little additional trouble in dealing with the mast. Then, as soon as sailing on a wind began to be commonly practised in canoes, came a mizen; and to give head canvas without placing the mast quite out of reach, a little jib was mostly added. It was found, however, an exceedingly troublesome sail to work, of little driving power, and apt to cause dangerous entanglements, as for instance, when necessary to unship the mast in a hurry, after an upset, etc. The final step was to remove the mainmast well forward, and to do away with the jib altogether. In most canoes it appears as if the mast could hardly be too far forward, as far as sailing is concerned. There are canoes in which the mast, stepped originally at 4 feet from the bow, has been moved forward by small stages till it stands within a foot of it; and at each successive removal, increased handiness and quickness in stays have been the result. Of course a mast thus placed cannot be handled under-way, and must be controlled by "machinery" from the well. There is a considerable variety of designs for lowering and unshipping the mainmast, but hardly any of them seem to perfectly fulfil the desideratum of allowing the spar to be got down and stowed snugly enough to allow of paddling against a head wind, and set up again, clear for sailing, while afloat.

The most usual means of lowering the mast was at first a "tabernacle." The heel of the mast is fitted into a sort of three-sided box on deck, in which it turns freely, and is then lowered

by a forestay. A tabernacle, however, unless made very high, very strong, very heavy and very ugly, gives insufficient lateral support to the spar, and it is difficult to make up for this by the use of rigging, on account of the narrow width of the bow abreast of the mast. This led to the adoption of the mast trunk or box,



originally of a quadrant form, but lately several square ones have been fitted, as shown in the illustration. To lower the mast, however, is only half the battle, and the latter half of it, to secure and stow away the whole rig, remains to be won. If the spars are very short, there will be no great difficulty in stowing the whole affair away: but to do this 7 or 8 feet will be the greatest length admissible. However, a very fair sized sail can be set on spars of this length, specially by the use of battens.

A design lately appeared in the *Field*, suggesting that the upper part of the mast should take off with a ferrule, and be stowed away with the sail, the lower portion remaining on deck. The objection to this is the great difficulty of replacing all the gear, halliards, etc., clear for resetting. Most of the large canoes

of the R.C.C. have given up stowing sails below, not only with the gigantic sails used in racing, but with their working canvas.

A gentleman who has made some good cruises in a canoe thus fitted, tells me that the impossibility of stowing sails below is a great nuisance in paddling to windward, and inconvenient when the boat is housed ashore or sent by train, but his craft being too heavy to be properly driven by small sails, he is obliged to put up with it.

All this chiefly applies to the mainmast. The mizen is very seldom made to lower, but if desired, it can easily be fitted with a tabernacle. Here and there, where very low bridges are common, this might be worth doing.

CHAPTER IV.

THE amount of sail which a canoe should carry is not easy to calculate: much depends on her form and dimensions, on the skill of her crew, and the waters in which she is to sail. Roughly speaking, for unballasted canoes, the formula L × B × D feet will give the area of a good sized cruising rig. Thus, $12 \times 3 \times 1\frac{1}{2} = 54$; $14 \times 2\frac{3}{4} \times 1\frac{1}{2} = 58$; $16 \times 2\frac{1}{2} \times 1\frac{1}{4} = 55$; $18 \times 2\frac{1}{4} \times 1 = 40$; which are very fairly proportional to the power of the boats.* These are canoes of the R.C.C. dimensions, D, however, being reduced in the longer craft below the R.C.C. maximum, which is more than they could utilize with any good result while retaining canoe form. With less sail than this, a canoe will hardly sail and be under good control in light airs, and at the same time it is no more than she ought to be able to carry in a very tolerable amount of wind in smooth water. I would not, therefore, depart very widely from these areas, unless

* These areas are for battened sails.

for special reasons, in first planning sails for a canoe. If they prove too large, they can easily be cut down, and if too small, it is not impossible to enlarge them while nearly new, and even a new suit of sails is no great matter of expense, the old ones being useful as a spare suit for winter sailing, etc.

The next question is, in what form to apply these areas to the canoe. The almost unanimous verdict of experienced canoeists is in favour of two sails: main and mizen. I have heard some few canoeists, however, object to the mizen as adding unnecessarily to the gear. Now, in the first place, the addition is extremely small; a mizen need have nothing but a sheet and some kind of a brail; and I hope to show that this extra gear is well worth carrying. A greater area of sail can be safely put upon a canoe in two sails than in one, and thus greater speed may be obtained; the handiness is greater, especially in squalls, than with the one sail, while the mizen forms a useful trysail for sailing in *very* hard winds. Some of these propositions may want a little proof, which shall be attempted to be given in a few words.

Let it be supposed that a canoe has a mainsail of 45 feet and a mizen of 15. It is proposed to throw all this area into a single mainsail. Now the mainsail, if well designed for a canoe, has already all the area which can be obtained from a given height and length. We can, therefore, only increase it by adding to the head, to the leech, or to both. Now additional canvas at the head of the sail makes the stability diminish out of all proportion to the increase of area and weight, while adding to the leech is nearly as bad, the whole weight of the extra spars and cloth being carried outboard to leeward, just where it is n't wanted; besides lengthening the spars beyond stowable dimensions.* Then as to

* The heeling effect of the weight of sails in a canoe is enormous. I once sailed a sea passage of some 30 miles to windward in a canoe whose mast had accidentally got a twist of 5 or 6 degrees to port. On the port tack she was as stiff under whole sail as on the starboard with a reef. It would be almost worth while to devise some plan for listing the mast to windward. The cause of the greatly improved sailing was, 1st, the removal of the weight of sails further to windward, and 2nd, that the burying effect of the sails is reduced, and, at small angles of heel, even converted into a lifting effect.

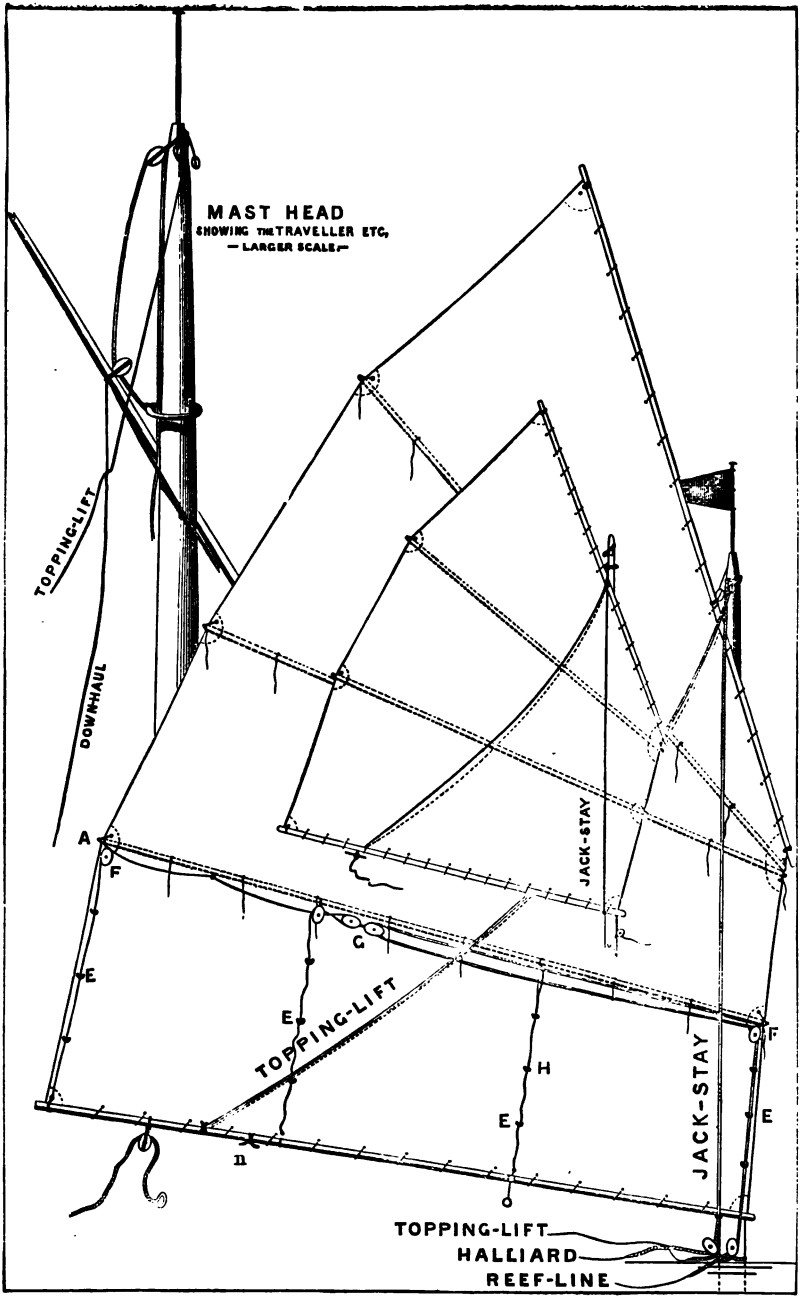
handiness, by the use of the two sails a canoe can be almost steered without her rudder, and if she has an after centre-board, we may leave out the "almost." I have made a canoe steer herself like a toy boat for 5 or 6 miles together, in a steady breeze and open water. But it is in a squall that the full value of the rig is to be appreciated, enabing the canoe to luff and to spill her mainsail at the same time, and even to lower mainsail altogether, without quite losing way or control of the boat. This will be seen more fully when we come to the handling of a canoe under sail.

Having determined to carry mainsail and mizen, it remains to decide on the rig. In this we are limited somewhat by the peculiar requirements of the canoe. For example, we cannot have any spar more than 7 or 8 feet long, according to the length of the canoe and the distance between her bulkheads.*

This limitation of length has one great advantage: it checks the tendency to carry the sails too high or too far out of the boat, the evils of which were noticed above. The use of battens in the sails, Chinese fashion, enables a larger area to be got with any given length of spars, and has other great advantages, enabling the sails to hold a better wind, and to be spilled without flapping, or eased off till nearly spilled, when they will not shake as even the best cut ordinary sails will do, but continue to propel the boat. Also more sail can be carried, in the ratio of about 7 to 5. The following designs, when made for battened sails, can be easily adapted to plain sails, but at a great loss of area and efficiency.

The position of the sails in a canoe, fore and aft, cannot be accurately determined except by trial. The usual plan for boats is to find the centre of lateral resistance, that is the centre in a fore and aft direction of the vertical longitudinal section of her whole immersed body, including rudder and centre-boards, and so to arrange the sails that their centre is in a line above this point,

* The use of a spar deck does not affect this question, as a spar cannot be raised to the level of the spar deck till it is wholly below. A little length however may be gained by having a watertight recess in one of the bulkheads near the bottom, to take the ends of spars.


MAST HEAD
SHOWING THE TRAVELLER ETC,
— LARGER SCALE —
TOPPING-LIFT
DOWNHAUL
A
F
E
C
E
TOPPING-LIFT
JACK-STAY
H
E
JACK-STAY
F
E
n
TOPPING-LIFT
HALLIARD
REEF-LINE

or a little fore or aft of it according to circumstances. For the canoe this plan may do to start with, keeping the centre of the sails rather too far aft than forward, as it is easy to reduce the mizen a little if she has too much after sail. A full bowed canoe will like her sails well forward, a fine one, more aft. Also, more after sail may be given if an after centre-board is carried.

Lug sails are by far the most generally used in canoes. There are three ordinary forms of lug, the dipping, standing and balance. The dipping lug, though one of the best sails in the world for strong crews in large open boats, when very short tacks are not required, may be dismissed at once as unsuitable for a canoe. To lower the sail for going about would be a nuisance, and the shifting of the tack would be an almost insuperable difficulty. The standing or working lug has the tack of the sail abaft the mast, while the balance lug has it forward of the mast. The latter *must* have a boom, with the former it is optional, but a canoe should have a boom with either. The balance lug sets the flatter, of the two in ordinary sails, but when battens are used the difference in this respect is little or none. With the working lug the boom can be topped up, which cannot be done with the balance lug, unless either tack or halliards are slack.

The accompanying illustration represents a working lug, with battens, with a maximum length of 7 feet 6 inches, which would suit a canoe able to stow 8 feet spars, 6 inches at least being required to allow for stretching, etc. The scale being rather small to work from, it will be better to take the dimensions from the following account:—

> Luff 4 feet. Head 7 feet 6 inches. Foot 7 feet 6 inches. Length on lower batten 7 feet 4 inches; on second and third 6 feet 9 inches. Hoist 6 feet 4 inches. Yard slung 3 feet from weather earing Clew to peak 11 feet 2 inches. Area 47 square feet. Area without battens, the leach being straight from clew to peak, 39 square feet.

The mast should be a grown spar 1¾ inches square at heel, and reduced to 1⅜ inches at head. It should be left its full size for about 8 inches above deck, nothing but the corners being taken off. The yard, boom and battens are of bamboo. If a similar

sail is to be used for a mizen, about half or three-fifths of the linear dimensions of the mainsail should be used, and only two battens.

I propose to give a full account of the cutting, fitting and rigging of this sail. The same will apply to most of the other sails to be described, and where there is any difference it will be pointed out.

The material should be bleached cotton sheeting, which can be had 9 feet wide, is very strong, and does not readily mildew. If specially light sails are required, calico must be used, but this is narrow, and must be joined. Seaming the selvages without any doubling or turning in, is the best way to join them. In a sail with straight leach, the selvage should form the leach, but when rounded, as in the present sail, the selvage should run in about the same direction as a line from clew to peak. The edges should be bound with tape, narrow on leach, wide on head and foot, and on luff a double thickness. The "pockets" for the battens may be made of the wide tape, or of strips of the sheeting. All tapes should be sewn on rather slack, as the cloth will stretch and the tape will not.

The gear required for this sail is as follows: sheet, halliard, tack, topping-lift, two reef lines, down-haul and "jackstay." For a mizen, the same, less one reef line and perhaps down-haul. This sounds a long list, but it will be seen that no sail in a canoe can be efficiently handled with much less. The halliard should be fast to a traveller on the mast, for which purpose a hollow brass curtain ring is good, being strong, very light and easily obtained. Only do not forget to take out the eye which is screwed into the ring, and smooth off any roughness on the inside with a file. The halliard then passes through a block, which is stropped with a toggle, by which it can be attached to the yard, then through a block at masthead, and another at foot of mast, and aft to hand. This arrangement of the traveller allows the yard to come down well on deck when lowered, and keeps it well up to the mast when hoisted, It is the invention of Mr. E. B. Tredwen, R.C.C. The sketch shows this and the masthead

arrangements. The halliard block should be fixed aloft by a wire strop round the masthead, kept from slipping down by a chock on the fore side. A little brass screw-eye above the strop keeps it from falling off when the mast is stowed away. The block at deck should be a cheek block on side of mast.

The tack should be toggled to the boom about 3 inches from the fore end, and lead aft through a block. The topping lifts are hooked or toggled to boom, lead through two little blocks seized to the masthead strop, and down and aft like the halliard. Whether "patent" reefing gear is used or not, there must be reef pennants leading from the luff, unless the canoeist is willing to lower his sail, haul it aft, reef and re-hoist. The sail is here shown with a very simple reefing gear; the invention of Mr. W. Baden Powell, and described by him as follows :—

"The reefing gear will almost speak for itself. I have used it constantly, not only in canoes, but in boats, and after fitting it in numerous ways, I have come to look upon that shown in the drawing as the most successful and sure working plan. The reef-line, in the first place, is woven cord, dressed with a light coat of boiled linseed oil, in order to prevent it shrinking, stretching, or swelling under the influence of weather or water. The after part of the earing is fastened to the boom by a 'clench,' or by forming an eye by sewing the end back to the standing part, and then seizing the eye to the boom. Then lead the reef earing up through brass rings, which are firmly stitched on the sail on patches, and through the block *f* at after end of the batten *d*; then through a thimble or ring stropped in above the next *f* block in on the batten; then through the sister block *g*, and back to and through the last mentioned *f* block, and down through the rings *e*, and fasten to the boom as before said. When the sail is fully hoisted the sister block *g* should rest nearly against *f* block, about an inch off. Next turn to and reeve the e^3 fore part of the reef earing. Make the standing part fast by clenching it through the cringle or eyelet hole on the luff of the sail at *d* (as shown in the rigging plan); then take it away aft in line with the batten, and reeve it through the block *g*; lead forward again to and through *f* at fore end of batten; then down through the rings to and through block abaft the mast, and into hand.

"The hand reef line *h* is fast to the batten *d*, and leads down through

rings on the sail and a ring on the boom, and is finished off by having a ring spliced into its own end. This line is used for snugging that part of the sail where the reef gear does not come, and the ring at the end of *h* is in such case taken hold of by means of a boat hook till brought into hand and is hitched to the cleat *n* on the boom. The hand reef line may also be used when the sail has to be shortened quickly for a short passing squall, and then shaken out again."

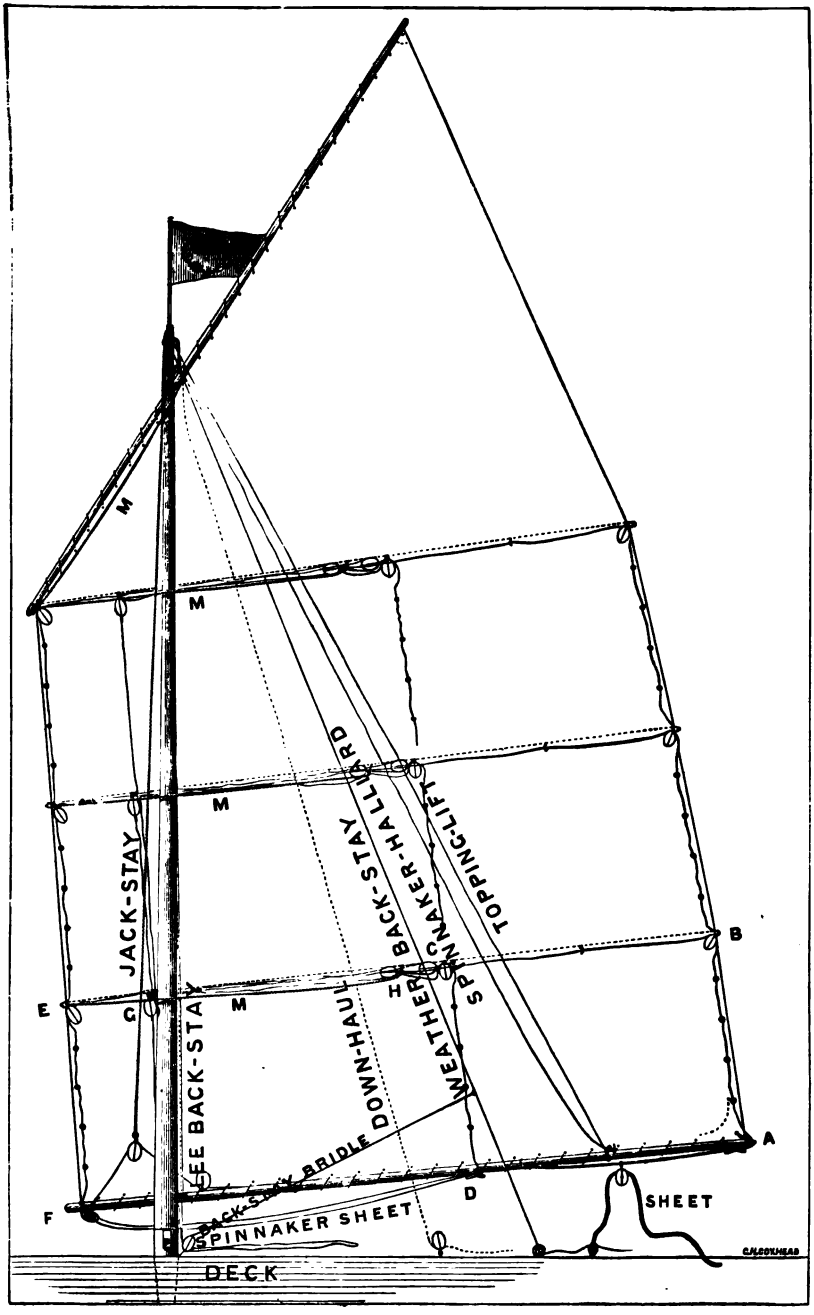
Mr. Powell applied it to a balance lug, and I have had to alter one or two words in his description, to make it suit a working lug, which it suits even better than the balance lug, requiring two less blocks in the lead. For the balance lug there is another and more suitable way of reeving the reef gear. The second reef, and the reef in the mizen, may be fitted in precisely the same manner.

If the reefing gear is not used, luff reef-pennants must be fitted to the fore end of each batten, and lead precisely as the hauling part of the reef gear, the after part of the reef being tied down by the ordinary points.

The down-haul is fast to the sling of the yard, and leads through a block on deck 2 feet abaft mast; it should never be omitted, as it may be the saving of the gear, the ship, or even the crew. The sail may come down of itself 99 times, but the 100th time something will prevent it, of course just when it is wanted to act like a flash of gunpowder.

The "jackstay" is a name given by canoeists to a line from the masthead to the boom, which keeps the latter from falling on deck when the sail is lowered. For this rig one way is to lead it under the boom and make it fast to the mast a few inches higher. Thus fitted it will keep the sail from falling about when lowered.

There should be two rings or thimbles on it, through one of which the tack is led, this prevents the jackstay from getting over the end of boom. The two rings are seized together in a figure of 8, one part surrounding the tack, the other the jackstay. As good a plan is to have a ring, like the traveller, round the lower part of the mast, prevented from slipping lower than an inch below the boom by chocks. To this the jackstay is fastened, and the tack rove through a thimble seized to the ring.


M
M
M
M
JACK-STAY
BACK-STAY
DOWN-HAUL
BACK-STAY
WEATHER
SPINNAKER-HALLIARD
SPINNAKER-TOPPING-LIFT
B
A
E
C
H
BACK-STAY BRIDLE
D
F
SPINNAKER SHEET
SHEET
DECK

Thus rigged, the sail can be taken right off the mast from aft, and replaced with equal ease. To take the sail off the mast, lower away, let go tack, and haul aft till you get the halliard block, which untoggle from mast, and hitch to a cleat for the moment. Then untoggle the tack and launch the sail forward again. Take off the topping lifts, and toggle them and the halliard block to the tack. Haul forward and make all taut. Then make up and stow the sail. To set the sail again the halliards must be captured by the boathook, or the tack may be made an endless line.

The better and snugger plan is to stow mast and all. When sail is lowered, let the mast come down, stop the halliards and gear to mast, then take off forestay at masthead, roll up sail and mast together, and stow away. Nevertheless it is well to be able to take it off the mast, as by this means a smaller sail, *e.g.* the mizen, may be substituted for it while afloat, or the mast may be left on deck while the sail is stowed below. In this case a longer mast might be used, but the mast shown in the design will be sufficient for ordinary work, and is much more convenient than a longer one.

We next come to the balance lug sail, the sail carried by all the racing craft of the R.C.C. For their large sails it is doubtless better than the working lug. The illustration shows a cruising sail of 56 square feet. The racing sails are as much as 100 square feet. It is fitted with identically the same gear as the racing sails, the list being as follows: sheet, halliard, tack, downhaul, jackstay, jackstay tackle, topping lifts, 3 reef lines, parrell bands to yard and to each batten, spinnaker halliard, ditto sheet, 2 preventer backstays, bridle and spring for ditto.

The halliard is fitted as in the last-described sail, as are also the downhaul and topping lifts. The tack is similar, but with the addition of a whip purchase to haul the sail flat. The jackstay ends in a block a foot or so above the boom. Its tackle is formed by a line fast at fore end of boom, through block on end of jackstay, through another block on boom, aft along the boom and fast to a cleat near the aft end. This allows of raising the

fore end of boom, and prevents the jackstay from coming taut when the mast is lowered. The parrel bands M M keep the sail to the mast when to leeward of it.

The sheet block, in this or any rig, may travel on a wire "jumper" under the boom, which distributes the strain on the boom, and allows a little less length of sheet to be used in running, as when the boom is squared away the block travels inboard. The sheet, of stout cotton or flax line, should have a ring near each end. When before the wind, one of these rings is let go, and runs up to the block, the other being dropped over a hook on the lee side deck. On a wind, the rings are hooked on both side decks, and the sail "humoured" by the slack. Another way is to let one end of the sheet travel on a line stretched across the boat as a "horse," but the line is apt to be in the way of the hatch, or of the crew when getting forward. In whatever manner the sheet is fitted, it should be so secured that the boom cannot get more than square. The sheet is bound to get adrift sooner or later, and if the sail goes right over the boat's bow, the consequences may be troublesome.

The reefs are somewhat similar to those described before, but there is no hand-reef-line, and there is an extra line to reef the piece of sail forward of the mast.

There are three parts of the reef lines, and a tackle. The leech-line is fast at A, leads up through rings to block B, and along the batten to C. The luff-line (which may be cut all in one piece with the leach-line) is fast at F, leads through rings to block E, along the batten to C, and through a block. The third line, which we may call the "bunt-line," is fast at D, led through rings and a block at C. The three lines are secured strongly to a free block H, which rests a few inches forward of C. The tackle is fast at G, leads aft, up through block H, down through block at G, then through a block abaft mast and to hand.

By hauling on the tackle, block H is pulled up to G, and all three lines are simultaneously tightened till the batten is upon the boom. For this gear the reef must taper very slightly, as it does not adapt itself to a reef deeper at one end than the other,

which the former reef gear does. The ends at A D F should be hitched to the boom, so that they can be slacked or tautened till the strain on them is exactly equal. This is a capital reef gear if well fitted and carefully kept in order, but everything must be done to keep down the friction, which has a tendency to be excessive, and spoil the working of the gear. It is the invention of Mr. E. B. Tredwen, R.C.C., in whose hands it works like a clock, and has aided him to secure many well won races. With his usual public-spiritedness he has made it general property, having given a description of it in the *Field* of Oct. 11th, 1879; and it speaks well for the gear that he has made no alteration whatever in it since that date.

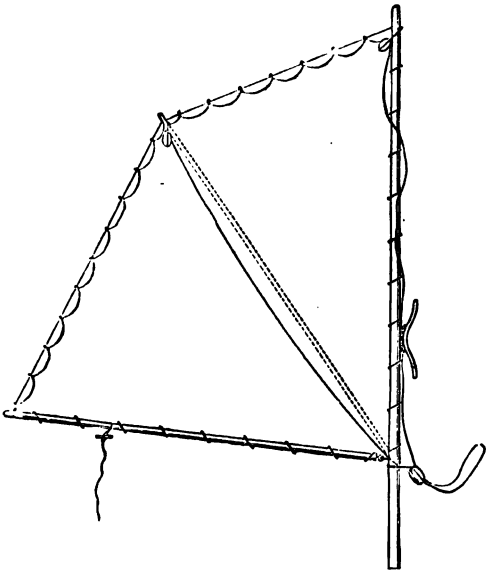
The spinnaker halliard is kept on the main boom, and runs through a block aloft and one at foot of mast. Some canoeists use one of the topping lifts instead. The spinnaker sheet is also kept on the boom, and leads through a block on the fore end of it. The after guy of the spinnaker is kept on the sail. The spinnaker boom is formed by adding a joint to the boat-hook, one end being kept more or less aft on deck, and the other extending to the tack of the sail. Preventer backstays are almost necessary with the long racing masts (over 16 feet in some 14 feet canoes). They have been fitted with a bridle which hauls one forward as the other comes aft, and with an indiarubber spring on this bridle, which carries them both forward to the mast when let go. All the R. C. C. racing boats "bore" by the head in running, and this tendency is greatly diminished if the head of the mast is hauled aft an inch or two, instead of allowing it to go forward.

For a small canoe the backstays could be omitted, and two reefs fitted instead of three; but unless cut almost like a working lug, with very little forward of the mast, it requires a longer spar. If the mast is thus rendered too long to stow below, it becomes imperative that the sail be easily taken off the mast, afloat. To do this we must abolish the parrell bands, without which the sail loses half its value.

The mizen used in racing under this rig by Mr. Tredwen is a battened lug, with an ingenious arrangement for reefing. The

boom is double, the upper part being fitted with a wheel like a window blind roller. To this the end of the halliard is fastened, so that when the sail is hoisted the line is wound on the roller. By pulling at this part of the line, the roller is forced to revolve, and the sail wound up on the upper boom. For convenience of handling, the bight of the halliard is led forward through blocks, and kept taut by a large indiarubber spring. This mizen works very well and has little gear, through what there is of it requires good workmanship. For a smaller mizen Mr. Tredwen has designed a spritsail, having an equal length on mast, boom, and sprit. Either the whole or half of this sail can be brailed by lines running through rings on the leach. It would be very suitable for a "storm" mizen.

The corners of the sail should be strengthened by double thicknesses of stuff called "tablings." Strong brass eyelets should be fitted in these, and smaller ones along head and foot for the lacings. In cutting out the sail great care should be taken not to stretch it. The head may be slightly rounded to allow for the springing or bending of the yard. Blocks and cord for rigging can be had at Good's, King William Street, E.C. The blocks should have brass sheaves and brass pins, and should be seen to run fair and freely, and the cords should fit them easily. These should be of the very best quality four strand line, except for reef lines



and other strings that are liable to kink. These should be of plaited line, a larger size of which is good for painter, etc. The canes for battens, etc., can be had at the fishing tackle makers, and should be carefully chosen, free from splits and worm holes. When cut to their length the ends should be bound with string or wire, and plugged with soft wood, afterwards being well varnished. Seizings of hard twine well varnished are very durable, but the booms might be bound with wire, as resisting chafe better, or even very lightly ferruled with brass, which the fishing-rod makers can do.

CHAPTER V.

THE next Illustration is of the Batswing Sliding Gunter, which was described as follows in a recent number of the *Field* by Mr. C. Penrose, R.C.C. It is a pretty rig, but cannot be readily taken off the mast; however, it is easy, by lowering the mast, to stow the whole rig away together. The length of the whole affair, allowing 4 inches from boom to deck and 11 inches housing of mast, will be 8 feet 3 inches over all. From what I have seen of the rig it appears very good, but the comparison between it and the lug would only hold good of the complicated balance lugs of the R.C.C. boats. As against the simple lug sail described above, it would have little, if any, advantage. Its area without the battens would be about 35 feet in mainsail and 8½ in mizen. I have taken the liberty of slightly altering the

description to suit the illustration. I am a little inclined to doubt the justice of the claim to be closer-winded than the lug. The sail may lie a little closer to the wind, but will it drive the boat any better to windward?

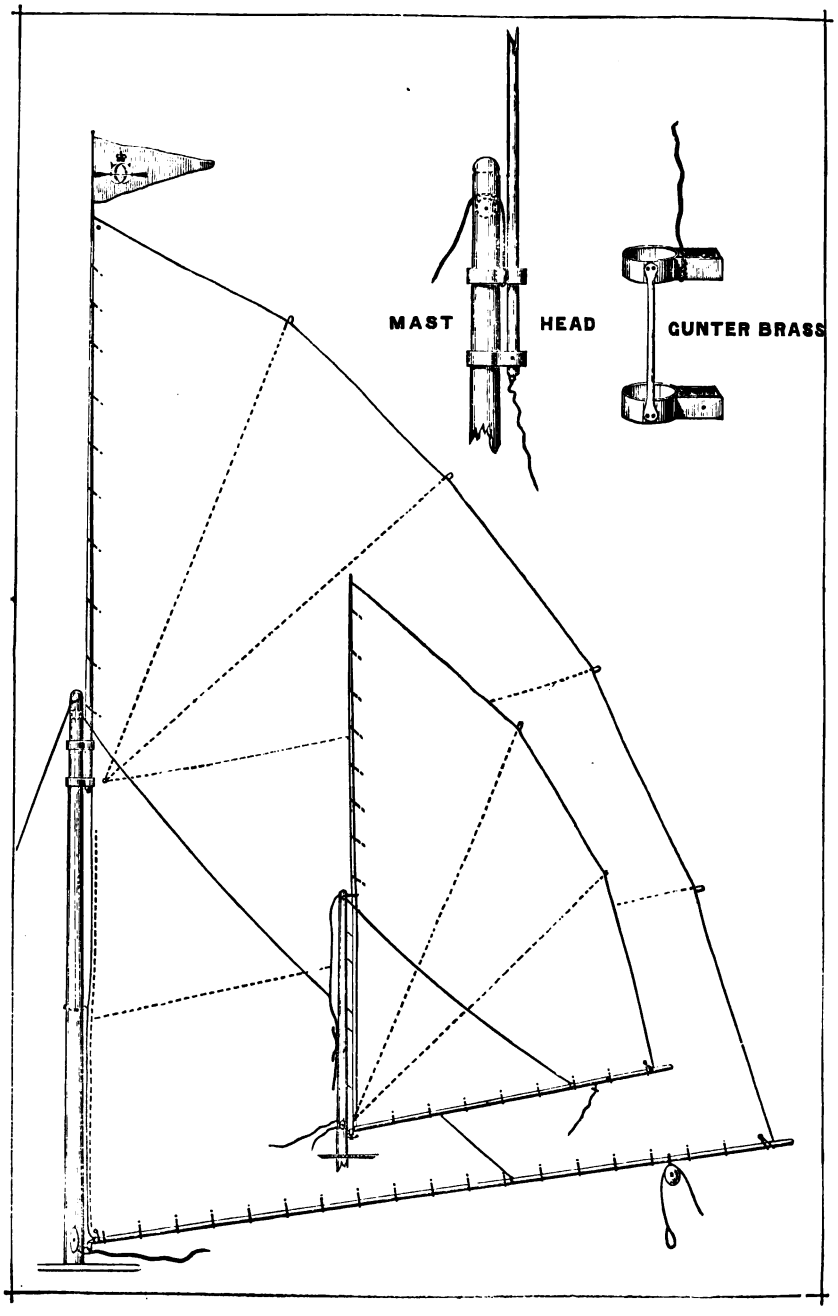
"This rig has stood the test of eight or nine years, and combines to a great extent the good qualities of the sprit-sail with those of the lug. I believe it was brought out by Patrick, the well-known and successful boat builder and boat-sailer, of Lincoln. About the second or third suit of these sails was made for my first sailing canoe in 1876; and, after hard usage and little care, only required a little mending at the corners and eyelets to be nearly equal to new in 1882.

"The rig consists of an ordinary sliding gunter mast and topmast, or, as some prefer to call it, 'gaff,' carrying a sail of elliptical form, containing nearly $\frac{1}{4}$ more area than a triangle of the same height and base. There should be a batten at each reef, of which there may be two or three, and one or more battens in the head dividing the leach equally.

"A downhaul should be fitted to the gunter brass and another to each reef; or of course 'patent' reefing gear may be fitted, which will act better with this rig than with the lug, because the gear has not the strain of peaking the yard. When the gunter brass has been lowered, the boom may be topped up to the mast, which for light airs is a sufficiently snug method, but in stronger winds something further is required.

"I have tried several dodges for lowering the 'gaff' cutter fashion upon the boom with more or less success, but probably the handiest plan is to lower the mast and all. When lowered, the masthead will fall right in front of the canoeist, and, by taking off the collar which holds forestay, the mast can be drawn aft and stowed below, leaving nothing on deck but the stay, and can be set up again while afloat with equal ease. The heel of mast must of course be made to pull out of the tabernacle when lowered.

"In the drawing, the rig is shown with two reefs, besides which a balance reef may be made by lacing the third batten to the boom. The mizen is something like Mr. Tredwen's 'sprit-mizen,' but has two battens instead of one, to look more in keeping with the mainsail. With this mizen stepped forward, and a small storm-mizen aft, the canoe will sail in almost any wind; and mine has repeatedly sailed in ease and comfort when the local sailing boats were capsizing in all directions. The dimensions of the sails in the drawing, as fitted to a 16-feet canoe, are nearly the


MAST HEAD
GUNTER BRASS

same as carried in the 14-feet canoe rigged with them in 1876, the difference being that the old rig had one more reef and one more batten in the head.

"The dimensions are:—Mainmast, above deck, 5 feet 8 inches; topmast, heel to shoulder, 6 feet 6 inches; boom, 7 feet; mainsail, luff, 10 feet 9 inches; foot, 6 feet 9 inches; clew to peak, 12 feet 6 inches; mizen, luff, 5 feet 6 inches; foot, 3 feet 9 inches; clew to peak, 6 feet 3 inches; area of mainsail, 44 square feet; area of mizen, 11½ square feet; total area, 55½ square feet. First reef, 14½ square feet; second, 12½; area of close-reefed sail, 17 square feet.

"Now for the advantages of the rig. In the first place, anyone can cut, fit, and rig it without difficulty. A boat is stiffer under it than under a lug. The sail sets flatter than nine lugs out of ten, and in a squall the wind can be sailed out of it without its flapping about. When lowered and brailed up it can be removed from the boat as easily as an umbrella, can be stowed below all ready for setting again, instead of having to be unhooked and untoggled from a lot of fastenings. Also it is short enough to travel easily in a railway carriage, instead of requiring the largest size of van, or having to be lashed outside the train, as has happened now and then with the long-masted lugsails common in the R C.C.

"The advantage of being free from all top hamper is very great, especially if sea sailing is indulged in, while the power of stowing the sails below leaves the canoeist only *one* thing to attend to, house, &c., viz., the canoe, instead of *two*, viz., canoe and sails.

"This makes no little difference when the canoe has to be housed in strange quarters or in a crowded boathouse. While the lugsail canoeist is 'setting' his delicate and complicated gear, ashore, perhaps in difficulties in finding a spot for the purpose, secure from waves or from barge's tow lines; the gunter sailer can put his boat in the water as if she were a paddling 'Rob Roy,' and set his gear up at anchor or as she drifts with the tide.

"I do not think this rig would suit very large areas or be good for racing against lugs, but for all round work in light and narrow canoes, I know nothing to equal it for ease in working, safety and lightness. The appearance is good and the falls of the lines on deck are shorter than with any other rig."

I am indebted to Mr. C. Whistler for the following account of an improvement in this rig, allowing the sail to be entirely

lowered, and giving additional support to the topmast when reefed :—

"The original form of double sliding brass, with which the ordinary sliding gunter is fitted, does not allow of the sail being lowered on deck, unless the mast is lifted bodily from the step; while it is only by unlacing the head of the sail from the topmast that it can be unbent for stowage.

"The advantages of being able to lower the sail easily and quickly—leaving only the short lower mast set during a paddle to windward—are evident, as the brailed up canvas of the ordinary gunter still offers a large surface to the wind. The present rig answers both requirements and has the further recommendation of being extremely light. In it, the upper ring of the original sliding brass (Fig. B) has been dispensed with, leaving the topmast free to swing on the fid of the remaining one, while a batten has been added to the topmast to which to lace the sail, leaving the topmast itself free to travel through a shackle at the masthead which takes the place of the original upper ring—as will be seen in Fig. C, where the topmast is shown hoisted.

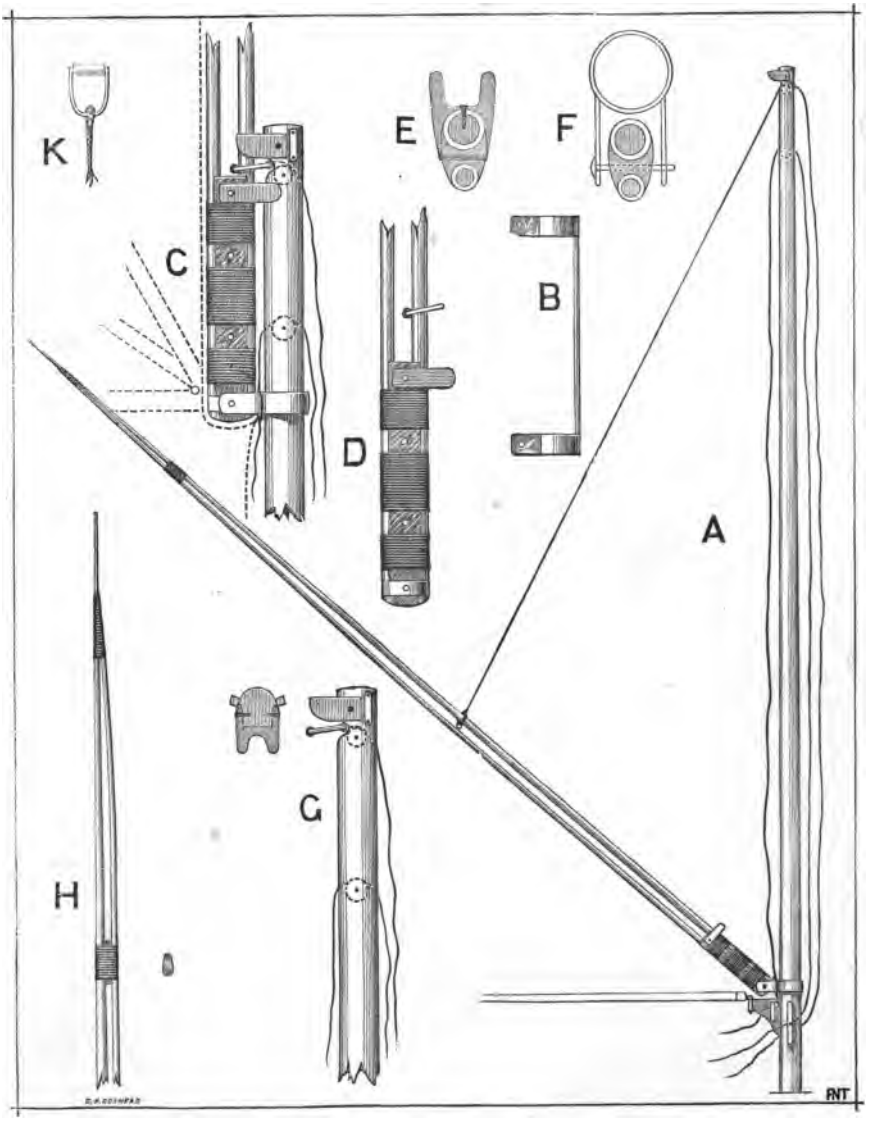
"By slacking off the line leading to the shackle the topmast is lowered and raised, hinging on the fid of the brass (Fig. A), the line thus forming a kind of peak-halliard; while by leaving the shackle fast at the masthead the topmast can be lowered as in the ordinary sliding gunter.

"The topmast is made of two light bamboos, plugged and whipped, the stouter about 1 inch diameter at butt, the slighter, forming the batten, about $\frac{3}{4}$ inch. At the foot (Fig. D) they are connected by a block of hard wood 9 inches in length, hollowed fore and aft to fit the canes, leaving sufficient space between them for the shackle to render without touching the lacing on the batten. To this block they are lashed, leaving a space free above for the jaws shewn in Figs. D and E, and intermediate spaces pierced for the lashing of the sail.

"The heel of the mast is pierced for the fid of the sliding brass (Fig. F), and protected by a brass ferrule drilled to correspond.

"The jaws, which are necessary to prevent the mast sagging to leeward owing to the brass twisting round the mast, are of oak, and made in one piece, screwed to the block and plug of the topmast cane, and fit the mast itself (Fig. E).

"Up to a height corresponding to the measurement between masthead sheave and foot of sail the bamboos are left free, but at this point they are again connected by a similar, but smaller block, and lashed securely,


K
E
F
C
B
D
A
G
H

previous to which the shackle, which is a solid brass U shaped ring with a roller to take the mast, must be slipped on the stouter cane. The topmasthead is finished by bringing the canes together, bevelling the smaller down to nothing to fit the other, lashing them at the point of contact, and leaving the topmast cane to carry up the remaining few inches required (Fig. H).

"The masthead (Fig G) is also provided with jaws, to prevent the topmast turning bodily to leeward, and to give support to the topmasthead when sailing close reefed, so preventing the strain on the heel of the topmast. They are made of oak, and the masthead is squared to take them. In Fig. G and the section, the sheaves for the topping lifts are shewn on a level with the jaws and slightly forward of them. Immediately below them is the sheave for the line leading to the shackle, and 7 inches below it the sheave for the main halliard leading to the sliding brass.

"The dotted lines in Fig. C shew the arrangement of the sail and battens. In Fig. A the gooseneck for boom is shewn mounted on a bracket to give more room for battens and boom in topping up. The downhaul and reef pennants lead through small sheaves on the sides of the bracket.

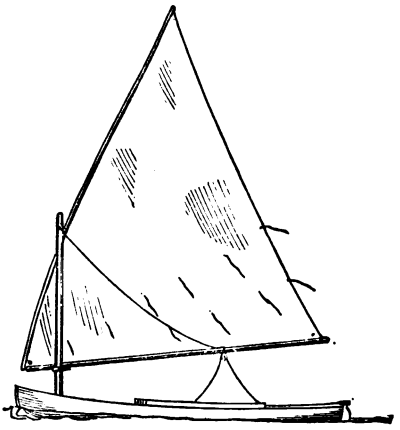
"By simply unshipping the topmast from the sliding brass, and the boom at the gooseneck, after the line to the shackle has been unrove and the toggle on the first reef cast off from the ring, the sail is left with only the two light spars—not more than the boom and yard of the lugsail.

"(NOTE.—In Fig. A, the free space between the topmast and batten has been unavoidably left too short, in order to shew the whole of the topmast. The length of spars, of course, depends on the amount of sail carried, but in a sliding gunter at present in use the height of lower mast is 6 feet, and of topmast 7 feet 6 inches, with a clear space between the canes of 4 feet 9 inches, giving a hoist of sail of 12 feet.)"

The lateen rig has been a good deal used in England of late years, notably on the Norfolk waters. It is not very suitable for canoes, at all events for cruising, being difficult to reef and impossible to stow, The mast required is very short, and the strings few and simple. A halliard and sheet with a topping lift are all that it wants. A tack may be added, or the boom kept to the mast by a crutch.

G

The rig has been still further simplified by some American canoeists, hanging the yard by a ring to a spike on the mast-head by hand, and, omitting topping lifts. The sail has thus only one rope. This sail would do for any one living by the river, for sailing in light winds in his home reach. Taking no time to set and get ready it would often be handy for an hour's sail in the evening. The yard should be nearly up and down—the more so, the better the boat will carry it.



One of the simplest rigs I ever saw in a canoe consisted of a main and mizen, each resembling the mizen shown with the sliding gunter. No halliards, only sheet and brail. One small triangular reef could be taken in each sail, for more wind the mizen was shifted forwards and a very small mizen set. Of course the mainsail was only given an area which the boat could carry in a good breeze, and sailing in very light airs was not to be attempted. The rig would be first-rate for a beginner. To take the sail off, lower mast and everything. The mizen also was made to lower, one line lowering both sails into crutches kept on deck for the purpose. This was for the numerous low bridges on the waters this canoe frequented. I have sailed in her, and though 14 feet by 36 inches beam, and very heavy, she seemed to slip along nicely under some 50 feet of sail. Dimensions, luff 7 feet 9 inches, foot 7 feet 6 inches: mizen 4 feet 6 inches and 4 feet 4½ inches. Leach of both sails well rounded.

The following sizes of line will be found most serviceable :—

Main	Halliards	...	...	laid	hemp	...	...	$\frac{5}{16}$	inch	diameter.	
„	Tack	...	...	„	„	...	...	„	„	„	
„	Sheet	...	...	„	cotton	...	...	„	„	„	

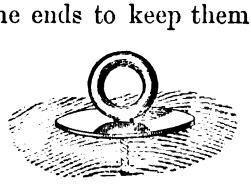
Main Topping lifts ...	laid hemp	$\frac{3}{16}$ inch diameter.	
Mizen Halliards	„ „ or Manilla...	„ „ „	
„ Sheet	„ „ „ ...	„ „ „	
„ Topping lifts ...	„ „ „ ...	„ „ „	
Reef lines	plaited flax line	$\frac{1}{4}$ „ „	
„ hauling part ...	„ „	$\frac{3}{16}$ „ „	
Painter	„ „	$\frac{7}{16}$ „ „	

It is useless to give the sizes of blocks, as these small blocks vary so much in form, but they must take their lines quite freely, and be easy running, with good broad brass sheaves, and *brass pinned.*

In conclusion, let everything be as strong and light as possible, not sparing trouble to make it so. Lightness must be had without sparing strength at the vital points of the rig. You never know what may depend on the strength and goodness of your gear. Fit everything, then, as if it were for a balloon, where strength is everything and lightness all the rest. The difference in stiffness between a properly light rig and some clumsy ones is as good as a reef.

A glance at deck fittings, and then we can leave rigging and get to sailing, which to my mind is the pleasantest part of it, though I believe some canoeists take even more pleasure in making and planning, than in using their gear.

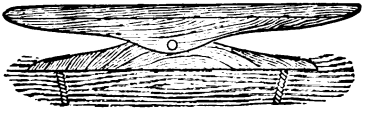
Most of our blocks are on the masts and sails, but there must be at least the stay block on stem, the mizen sheet block, and the downhaul, if for a lug. Thimbles or wooden bullseyes may be used for the two latter, which must be securely stropped with grommet strops to brass screw-eyes. The stay block should have a wire strop through stem-head, the end of the tackle being spliced into the strop at the end of the block. Screw-eyes should be fixed in the side decks, and the end of each line put through one, "figure-of-eight" knots being tied in the ends to keep them from going adrift. Each screw-eye should go through a round brass plate with a hole in centre. These, as well as the eyes, can be had at Nettlefold's, High Holborn. They prevent the eyes getting knocked



into the wood by a blow or pulled aside by the strain, and add greatly to neatness of appearance.

In the wake of these should be the cleats, carefully arranged within reach of hand. The following is my own arrangement, but let each man suit himself, as some are more left-handed, etc., than others :—Starboard side : stay tackle, main halliard, fore centre-board line, after centre-board line, mizen sheet. This is their order from forward aft. Port side : main tack, reef lines, downhaul, topping lift, mizen brail *or* halliards. The reef lines and downhaul should be the contrary side to halliard, that they may be held in one hand and it in the other in reefing and lowering. If I have a lug mizen, I use standing mizen topping lifts, *i.e.*, fast at masthead. If there is a mizen reef the reef-pennant should lead on port side and the halliard to starboard.

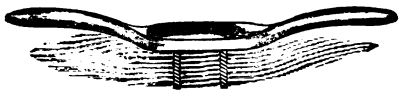
For cleats, the ordinary brass boat-cleats are not very suitable, requiring too many turns and a hitch over all. All canoe cleats should hold with a couple of turns without hitching. Paget's patent rocker cleats are very commonly used. They hold with one turn, but are clumsy looking, and, large or small, are all made for one size of line. that is, blind cord.



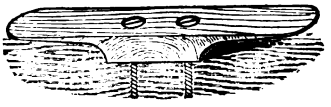
There is a round headed cleat sold for blinds, which I call the "Sunflower," I don't know its trade name. It must be fixed with its head towards the strain, and one turn will hold anything if the pull is steady, but if played "fast and loose" with, it will not hold.

Now for home-made cleats. Mr. Mc Gregor (Rob Roy) invented leather cleats. They are very good for light work, such as a mizen brail. They are simply stout leather cut to shape, and screwed with two brass screws to deck.

Several of the R.C.C. canoeists have home-made brass cleats, made of a strip of stout flat brass, filed round at the corners and ends, bent up a little, and screwed to the deck.



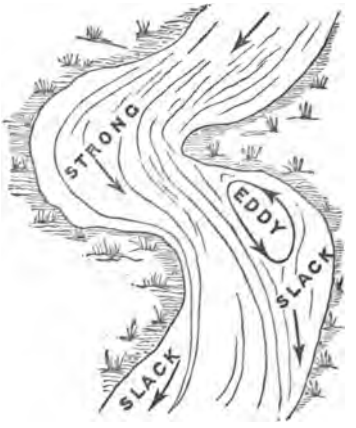
As good as anything are well-made ash cleats, which anyone can make for himself. Each cleat should just admit the line to jam between it and the deck. They are light, and like the leather cleats, they do not injure the hands or the paddle that happen to come against them.



CHAPTER VI.

THE management of a canoe in paddling requires no special remark. A little trial will show how the craft is to be turned and manœuvred, brought alongside a landing, etc. The chief thing to remember is that a canoe cannot be rapidly turned in her length like a sculling boat, but that a circle must be described. However by patient backing and paddling a canoe can be got round in her length, which may be required in a narrow stream or canal. Remember to utilize the stream in turning, *e.g.* if proceeding with the stream, put her head into the slack water near the bank, and the stream will turn the canoe of itself, and *vice versâ*. In a strong current, remember to steer well above any

fixed object you wish to cross, as a rock, buoy, vessel at anchor, etc. Vessels, etc. adrift, or under way may be considered as in still water, being borne by the same current with the canoe. In paddling against a current, avail yourself of every slack and eddy. These will be found in shore, on the side towards which the next bend turns.



A canoe can make use of these better than a row-boat, because she can keep so close to the bank, provided of course there is sufficient water.

Paddling among waves is probably the "strong suit" of a canoe. In many things boats of double her size or so can beat her, but at this she is unequalled. The forward position enables the paddler to see each "form of water" as it approaches, and to deal with it accordingly, and he can balance the boat by his body and paddle to neutralise any tendency to upset.

The chief thing is to have the well securely battened down, to have a long paddle with blades of moderate width, and to understand the management of craft among waves. To batten down completely, in addition to the hatches and covers, a short coat of mackintosh or very thin oil-skin should be used. The skirt of it should fit round ledges on the coamings and hatch-covers with an indiarubber cord, and be so cut and fitted that the cloth sets as fair as possible, forming, as Mr. Baden Powell says in his Book on "Canoe Travelling" (1871) "a kind of tent, of which the captain's body is the pole." The front should open as little way as possible, just to let the head through, the lower part being sewn up. The wrists should fit tightly to keep out water. An indiarubber band will do this. To put it on, get the sleeves on first, then take the coat in both hands, rolling it up till it forms a huge ring. Then quickly lift it over head and it is on, without

losing sight of the course, etc. for more than a second. To put it

on in any other way is unsafe, as some difficulty may arise while you are blindfolded and entangled by the coat.

If properly fitted it will keep out every drop of water, and at the same time readily come away in case of an upset, or if a sudden jump up or out is necessary.

One should also understand the management of craft among waves, towards which end a few suggestions may be of some little use.

In meeting a dangerous looking wave, put the boat's bow fairly into it, and do not allow it to catch her on one side. Do not force her ahead too much in meeting such a wave, but let her be ready to yield to its force. At the same time do not stop the boat for every wave you meet, but keep her going boldly, not minding a little white water on deck. Try to judge the waves thus—"There is a big one to windward, thin at the top, crowned with a light streak or two of foam—Look out!—but no—it is broken already, and reaches the boat in a mere harmless patch of tumbling foam. Here is another big one—never mind him—he's too round to break. Now a steep square-looking customer, he is timed to break just at the moment he will meet you. Up with her into it! That's the way: and now the wave is broken, and the cataract of white water is astern instead of being on the top

of you." But no words can fully teach the art of dealing with waves. The only thing is to try gradually to acquire it, beginning with moderately rough water, within reach of help and shelter, and soon it will be easy, and one of the most exhilarating forms of canoeing will have been mastered.

Now for sailing: we will suppose you have everything properly rigged and fitted, and on board.

To Set Sail.—Unjoint the paddle, and stow half below, keeping the other half on deck, where it should be secured by a loop of cord or indiarubber. Get your mast on deck, heel forwards. Unroll the halliards, etc., from mast. Push the heel of mast into its trunk or tabernacle. Put the collar of forestay over masthead, ship your flagstaff in the hole provided for it in masthead, set up the stay, and there's your mast. Lead the halliards, etc., through their screw-eyes and knot the ends. Now get up your sail, toggle on the tack, halliard and topping lifts. haul forward by the tack and halliard, seeing that the sail goes between mast and jackstay. Secure the sheet. Set taut the topping lifts and hoist away. The mizen may be set first if head to wind. All its gear should be kept on it except the sheet, which should remain on deck, both ends within reach of hand. Toggle the sheet to the boom, and step the mast by hand. If the mainsail has been stowed with its mast you have only to follow the instructions for setting up mast, the mainsail going with it.

To Take in Sail.—The method of taking a lug mainsail off the mast has been previously described. To take in mast and all: lower sail; lower mast nearly down, take a bit of line and tie it round mast, halliards, topping lifts and all. This keeps all clear for setting again. Take the lines off the cleats, and unreeve from the screw-eyes. Lower right down, unship flagstaff and stay, pull the mast aft, roll all together and stow below. For a gunter mainsail, top boom up to mast, and proceed as for lug. The tie, however, round mast will not be needed. To take in a lug mizen, lower sail, ease sheet, tie the lifts, etc., to mast as above, unstep mast, untoggle sheet, roll all up together and stow. For sprit mizen and other similar ones, brail up, unstep mast, and so

on. The more neatly these things are put away the better they will go up again. An oilskin cover should be provided for the sails, which will keep them dry and clean. If made like a bag for a third of its length, the rest to tie with points, it will be most convenient. If you stow both sails together, one bag, if separately, have two, one for each side the boat. All this making and taking in of sail may be done at anchor or adrift, or on shore for all that matters.

To Shift Sail.—Take in one sail according to the above directions, and set the other. Sometimes a mizen has to be set forwards by stepping the mizen mast in a step near the main step. Have a sheet bent on (do not unreeve the proper mizen sheet), and the brails, halliards, etc., rove to lead aft. Then go forward and make quick work, being careful not to go more on deck than necessary. If in rough water, first lower mainsail and let her lie head to wind, with fore centre-board down. Then shift mizens as quickly as may be. Then get the big mizen forward as mainsail. A canoe will lie very close thus, but will go astern very fast, so keep the mizen drawing as much as you can, by putting the helm up. Some canoes will even sail under mizen, the windage of mast forward being enough to balance it, of course with the help of the rudder.

To Reef.—With reefing gear. Top up the boom about a foot, cast off halliard, and haul upon reef-line, easing down halliard as the reef comes in. Make fast reef-line, set taut halliard, ease lifts, and the reef is in.

Without the gear. Set up lifts. Ease halliard and haul down reef pennant. Luff up and tie after reef point first, then the others. On a wind this takes very little longer than reefing with gear, and off the wind the boat will sail very fairly for a while without tying the points, if the lifts are kept taut. Off the wind, if it blows too hard to haul the boom in for tying points, and by reason of sea or otherwise it is not desired to luff up, lower the sail nearly down, haul aft sheet and tie points.

To take out Reefs.—Let go reef points, pennant or gear, and hoist out the reef by the halliard.

Sailing by the wind.—There is an immense difference in the behaviour of canoes on this point of sailing, but rig and trim do much to determine it, and to these the greatest possible attention must be given. A canoe should be so sparred and sailed that with fore-centre-board only in a light steady breeze she carries an easy weather helm, and, on the helm being released, comes quickly to the wind. If her weather helm is excessive, it is easy to reduce after sail, or to move the mizen inboard a little; if she carries lee-helm, a larger mizen, or further aft, or more leech to mainsail is required. With more wind, the canoe, as all properly designed boats, will carry more weather helm, which may be moderated by lowering the after centre-board. If there is no after centre-board, the mizen must be reefed. But the after centre-board is very useful. For example, in sailing on a wind, if this centre-board is lowered, and the mizen sheet eased a trifle, the boat will steer herself admirably, luffing a little when the wind increases, and falling off to her course when it lulls.

It must be remembered that the flat-setting battened sails will lie closer to the wind than any boat will sail, so that the shaking of the sail is no guide to steering, and the boat must be kept away a trifle beyond the point at which the sails will "sleep," to give her strong way through the water. If in still water the boat makes her course on one tack at right angles to that on the other, she is looking *well* to windward. This is 4 points from the wind, but in light airs a well rigged canoe will *look* up to 3 points, but would make *very* little way. Such a course would only be worth steering for a few yards, to weather an obstacle, etc.

I do not think that skill in sailing any craft to windward can be learnt from books, so I shall omit most of the instructions on the subject generally given in works on Sailing, only reminding beginners that every change in the wind's force or direction should be followed, keeping away if the wind draws ahead, and luffing if it frees, luffing also to each little puff, so as to shoot to windward while relieving the boat from undue pressure, but always keeping good way on her.

As sailing a canoe in a strong wind is a little different from

boat sailing, I may make a few remarks on that part of the subject. In the first place the canoe should carry no more sail than in the true strength of the wind she can bear without putting her gunwale under. In luffing to squalls the boat's way gets so much deadened that it is better to ease the sheet a trifle than to luff too long or too close. If the boat gets so knocked down that her sheet cannot be let go without the sail going in the water, the canoeist will have to exert some activity to avoid a capsize. The helm will probably be useless, so leave it and sit on the weather coamings, which helps the boat to right, and is a good position for getting out if she goes over. From this position, raise after centre-board if lowered, let go main halliards, top the boom up all you can, or do as many of these things as you have time for. It is in this sort of weather that the main and mizen rig conspicuously beats a single sail. Say that a squall comes down on a sudden like the blast from the mouth of a gun, with the 2-sail rig the mainsheet can be "flown" and the mizen will keep way on her and enable her to luff, the windage of mainmast and sail being sufficient to keep her head from coming right into the wind. With one sail, on the contrary, if the sheet is let fly, the boat, as soon as she loses way, will pay off and fill the sail, and if the squall lasts a minute nothing but a brisk use of the downhaul will keep her masthead from making acquaintance with the water. No doubt a skilful boat-sailer can manage generally to relieve the sail sufficiently without losing way, but it undeniably takes a skilful hand to do it.

Sailing by the Wind in a Sea.—The Canoe must be judiciously canvassed, about a reef more being taken in than for the same wind in smooth water. The seas must be met something as in paddling, luffing the boat to meet the vicious ones, but never letting her come actually head to wind. The boat's way is somewhat deadened by luffing, so that she meets the sea with less force, and at the same time her head is turned towards it. The moment she has met the sea, up with the helm and gather way again, so she will drop slantingly down the back of the wave, and not shoot her bow into the base of the next one. The chief

danger is of getting a sea into the sail—if you have been too late in preparing to meet a wave, and see that it will break right on the bow, hold on to the last moment, then let the sheet go by the run and throw all your weight to windward, but if this is done a second too soon it will make matters worse, and she will either be upset or perhaps smashed. In any case there will be a regular smothering for a second or two, but if everything goes well, you will come out of it right side up with an increased feeling of respect for seas.

To Tack a Canoe.—Some canoes tack very freely, especially heavy ballasted canoes that carry good way in stays. Some of these hardly *can* miss stays in a true wind and smooth water. Longer canoes stay less rapidly and certainly than short ones, as they cannot turn so fast, and their way is expended before they are round.

If the canoe is very handy, all you have to do is to get good way on her, with after centreboard up, and mizen well flattened in. She should then carry a strong weather helm. Ease the helm down, and she will fly up in the wind, putting it gradually harder over till she pays off. As she passes head to wind, lower the after centre-board, if you want it.

If you can get the canoe to fly up head to wind of herself, rapidly, and can keep the rudder in reserve for paying her off, she is sure to stay well. She must be made to do this by altering her sails, trim, etc., and do not be satisfied till she is doing her best.

In light airs one can help the boat by one's weight a great deal, leaning a little to leeward as the helm is put down, and changing sides as she passes head to wind.

Missing Stays.—If the boat gets in irons—that is, comes up to the wind and refuses to fall off, hold the mainsail to windward, let fly the mizen sheet, lower after centreboard, and, if necessary, even raise fore centreboard, shifting the helm if she gets stern way. Of course you will back her off on the tack you want, if possible; if not, then on the former tack, get way on her and try again. If cruising, it is better to bring her round with the

paddle, than to waste time in trying to make her tack if she does not come round at the first trial; but in racing, the boat must be made to tack. Some clubs allow back strokes of paddle in tacking, and if they are made in a sidelong fashion, they may be made to turn the boat strongly, while retarding her very little.

In beating down stream, tack either in or out of the current, not on the "edge of the tide," otherwise the action of the water will counteract the movement of the boat from beginning to end of the manœuvre. In beating up stream, the contrary is the case, and the difference in velocity of the current near the bank and outside helps turning, and may sometimes be seen to make the slowest boat come round like a top.

In very hard winds, under greatly reduced sail, a canoe can hardly be expected to stay without help. The same is the case in really rough water, in which a "smooth" for tacking should be carefully watched for, specially avoiding the moment when a big wave is coming at you.

Often a canoe, which at first seems very slow and awkward in tacking, will gradually improve as her trim and rig are adjusted, and her handling properly understood, till at last she performs exceedingly well, sometimes even better than one which will stay fairly at the first trial. Therefore, I would say, never condemn a craft for being slow or slack in stays, till she has been tried with different rigs, different masting, trim, rudder, &c. Sometimes, too, a little adding to or taking off the heel, or forefoot, may make a slow stayer into a quick one.

Reaching in smooth water requires no special remarks. If squally, it is better to ease the sheet a bit than to be continually luffing for the puffs, and if the boom end then goes in the water, reef.

In broken water, on a reach, sail as straight as you can, and it is wonderful how the worst seas seem to miss you, breaking before they meet you, or passing a length astern. But if you see one that means mischief, begin in good time and luff to it, or if you have the wind abaft the beam, keep her off dead before

it. You will be guided in this as you seem to be getting to windward or leeward of your course.

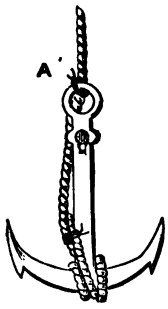
About the wettest form of canoeing is sailing in the little sharp waves formed by a fresh breeze in narrow waters. They are too small to be dealt with separately, the only thing is to disregard them, and to keep as dry as possible, by battening down the well, and putting on waterproof coat.

Running before the Wind.—The boom should be well squared away, and if there is any rolling, top it up a foot. Never let her sail "by the lee" except in very light winds for a short distance, and even then it retards her way. In a strong wind it makes the boat roll badly, even to a dangerous extent, but much depends on her form. Never let the head of the sail get forward of the mast. A well designed canoe will hardly run her bow under water in any breeze, but if any tendency to do so appears, shorten sail promptly. In jibing, haul the boom amidships and let it go quickly but steadily as the sail comes over. If the wind is too heavy to jibe all standing, ease up the halliards, and haul the yard down partially by the downhaul, or better by the close-reef-line, jibe over and hoist again, the boom being well topped up during this manœuvre. In strong winds the mizen should be taken in, especially in rough water, but in moderate weather it may be got to set on the opposite side to mainsail, which is called "goosewinging" it. In a seaway the waves make steering difficult before the wind, but an after centre-board almost wholly removes the difficulty, and does away with the use of drogues and such contrivances. It is on this point of sailing that the value of the topping lifts, downhaul, etc., is appreciated.

Suppose you want to take the sail off her, or to reef, when before the wind, with sails in which these essential fittings had been "simplified" away, you would have to round to and come up in the wind, perhaps at great risk, and with almost the certainty of a ducking. With this gear, you have only to top your boom, lower the sail, haul it aboard, and deal with it at leisure. I am supposing the wind too fierce to allow of the boom being hauled aboard with sail standing.

To Anchor a Canoe.—The painter should be led through a hole in the stem, and both ends brought aft, in one of which there is is a large thimble. Pass your "cable" through the thimble, overhaul a couple of fathoms of it, and bend the end to the ring of the anchor. Haul on the other end of painter, till the thimble runs out to the bow, and make fast. Drop your anchor over the side, and haul on the cable. You now have it under your bows, with the cable working through the thimble as through a hawse-pipe. Luff up head to wind, and as soon as she begins to fall astern, let go your anchor and about 3½ times as much cable as there is water. If there is any current, except it be with the wind, lower sails before letting go.

To Weigh Anchor.—Get all ready, then heave short and get your sails set, if the tide will allow; then break out the anchor, run it up to the bow and sail her. Let go the painter, and your anchor will come aboard amidships. Wash it and your cable, and put everything to rights. The cable should be of similar stuff to the painter, good plaited line, as any kinking is fatal to the working of this method. The anchor should be from 2½ to 3½ lbs. weight, and as long, large and sharp as can be; a short dumpy anchor is no good for small craft. It should stock and unstock with a screw. If on bad holding ground, back the anchor with any weights you have, a few feet above it on the cable. On rocky ground where there is danger of losing an anchor, make fast the cable to the head of the anchor where the arms meet the shank, and stop it to the ring with a bit of soft yarn, *a*. If the anchor catches anything, the yarn will part when you heave on it, and the anchor come away in most cases. But if you know that you will have to anchor, as for fishing, on a rocky patch, you should have a big stone on board, well secured to a rope "becket," to use as an anchor.



When practicable, it is best to pick up a mooring, instead of anchoring. Choose a small one of course; get hold of the buoy, keeping carefully head to tide, or it will be pulled out of your hands. Get in the buoy rope till you come to the mooring chain. If this is very light, make it fast to your painter and haul it to the bow, coil the buoy rope, and lash the buoy on deck, forward of the well; if heavy, ride to the buoy rope instead. Never make fast to a floating buoy or to any vessel for more than one tide, and not then if you are not going to remain on board.

To Beach a Canoe.—In smooth water this is easy enough, but if at all rough it is an awful business, and not to be attempted in a heavy canoe. Get both centre-boards well up. Take in all sail. Trice up the rudder. Take off the hatch and hatch cover. If there is help at hand, a couple of men can catch the canoe by the fore end of the well, and perhaps another by the painter, which should be cast off from aft, and up she goes, with you in her, all safe and dry. If the men know the craft, all right, but if not they are dreadfully likely to pull at something that won't bear it, and it is impossible to make all the gear so stout as to stand pulling at. If alone, you *must* get wet in beaching, on a shelving beach to the knee at least, on a steep beach, probably over head and ears. In the former case, the moment she is in a foot of water or so, jump out with the painter, and haul her along. The The case of a steep beach is almost desperate. The instant she is about to touch, out you go with painter, choosing a rising, not a falling wave. Get ashore as best you can, and haul her up quickly. Some slight damage is almost inevitable in this case.

To get off a Beach.—With help this is fairly easy, even in some sea. Let a couple of men launch the boat carefully with you on board, and well battened down, paddle through the surf, and then set sail. In moderately smooth weather, on a favourable beach, one can get off alone, wading beside the boat to 18 inches of water, and jumping in. I need hardly say that all this work demands a strong canoe, strong fittings, good keel and bilge-pieces, and a good swimmer as captain.

How to manage when capsized.—Get out to windward, and lie

athwart the boat's side, let go main halliards, and get mainsail down, and if she will not then right, down mizen also. Cut away anything that won't run of itself. Get in as she rights, set mizen, and lower the fore centre-board. Bale out, and get way on her. Men have been capsized in smooth water, and only wet their legs to the knee, and arms to the elbow, and have even been upset in sailing races, righted their canoes, and come in for a place at the finish.

Upsets are not necessary at all, I have had very few, and those chiefly when trying experiments which I knew were likely to lead to "capsism," and was prepared to face the consequences. Some kind of a life-buoy or belt on board is advisable, as it imparts moral courage, and a sense of prudence to the crew, but its practical utility is marred by the fact that it never happens to be on when it is wanted; by the same mysterious law of nature which makes it rain when one has a new hat. If the canoe was run down and sunk by a vessel, the survivors, if any, of her crew, might be pleased to meet the life-buoy floating about, if only as a reminiscence of the craft.

A very large stout swimming-collar, got up like a life-buoy in a canvas case with the boat's name on it, might be carried on deck in some readily detachable manner, and would look very ship-shape. It would be more useful than a *small* life-buoy, a large one being out of the question, and more easily and rapidly put on than a belt, especially *after* the upset.

To board a canoe from swimming.—Crawl as far as you can on to the after deck, forward of mizen mast, with your head aft. Turn round on your back and get a hand on each coaming. Then lift your feet into the well. If you can't do this, unship mizen, get hold of the stern, push it between your legs, creep forwards till near the well, then sit upright, astride of the boat, and lift your feet into the well. If neither of these will suit you, I fear you will have to remain outside, so by all means practise them when bathing, as also upsetting, righting, etc. It will give the boat a good wash, at least, and add greatly to your confidence when afloat.

Always carry a good baler and a sponge, and have a knife in your belt to cut away any gear that entangles you, or refuses to render.

Above all, don't be flurried or frightened in "the day of adversity," and if you get upset, go steadily to work to save the ship, in a business-like manner, as if it was quite an ordinary part of the day's work, a little unpleasant perhaps, like paddling against a head wind, but nothing more. When the craft has been well righted, and brought safely into port, one has a feeling of satisfaction that goes far to outweigh any remorse at having been awkward enough to let her go over.

Coasting.—Sea sailing will probably be begun in a bay or river mouth, which will afford a fair amount of shelter. But in a little while the canoeist will doubtless be ambitious of making more extended cruises, and in settled weather nothing can be pleasanter. However, it is well for this purpose to be not only a good canoeist, but something of a sailor as well. The chart must be understood, and carefully studied before starting, as one's hands may be too full for it when afloat. The tides should, of course, be carefully "got up," and the indications of weather should not be neglected. Local information as to tides, etc., from fishermen should be carefully used and combined with that in the chart and pilot-books. Courses should be judiciously shaped according to present and probable winds, with an eye to the barometer, so as to have a refuge to leeward when possible. However, I would recommend no one to begin coasting in a canoe until some experience has been gained in larger craft, or where this is wanting, not to be over-bold in "forcing a passage." It is quite a sufficiently creditable performance for so small a craft to go round the coast at all, without incurring needless risk. However, in fine weather, if a man possesses the necessary amount of skill and seamanship, coasting is great fun, and if one has any yachting friends on the same coast, meeting with them from port to port adds to the amusement. Besides, a justifiable feeling of pride occurs among the crew of the canoe at hearing the men in the big yachts say, as she arrives at harbour,

"Why, here's that little canoe again that was with us at—such and such a place—however did she get here?"

General Remarks.—In navigable waters a lamp, preferably with green and red lights, should be always ready in case of being out at night. It is important to let other craft know where one is, but it is of still greater consequence to know where they are going, so keep a sharp look out, at night, and indeed at all times. I believe the danger of being run down by steamers is no greater by night than by day, if a proper light is shown. There is at least this advantage at night as compared with day-light, that seeing the light only, people do not guess how small the craft is, and thus are more inclined to give her room.

Whether by day or night, give a wide berth to steamers and all craft, considering not only the danger of a collision, but that it is unreasonable for a small pleasure craft to delay or interfere with important traffic. Remember the general rule in meeting is, Port your helm, *i.e.*, "keep to the right." A fog-horn takes up very little room, and should always be carried where it can by any possibility be wanted. A fog-horn might be contrived, which by shifting mouthpieces would form a speaking-trumpet. This would be very handy.

A good compass should be on board, as a matter of course, and should be fitted with gimbals to compensate for the motion and listing of the boat. A small lead and a few fathoms of line, wound on a stick, is almost necessary in some places. It is particularly useful to tell the direction of the tide in fogs or at night. A small aneroid barometer is now a very cheap investment, and one that is well worth making. Great accuracy is not needed, but the instrument must be as sensitive as possible, to give ready indication of a rise or fall.

A tide table must be carried, and it is well worth while to calculate the daily tides for the places likely to be visited, for the whole period of the cruise, and write them out on a card. This should be protected by a coat of varnish, and fastened with a couple of tacks or drawing pins to the under side of the hatch, or

some other convenient place. The same may be done with lists of bearings and distances, buoys, lights, etc.; but all of these that lie on the course intended to be sailed each day should be committed to memory the evening before.

CHAPTER VII.

A CANOE is not big enough to live on board of for any length of time, nor would she be if she were half as big again every way, so the right thing is to have the canoe so light and small that she can be landed with ease, and stowed in a boat-house, while her owner goes ashore.

I think it is usually best when possible to put up at hotels, not to camp or sleep on board, as the better you feed and sleep the better you will work. However, it is very important to be able to spend a night on board without hardship, and so to render oneself independent of all that anxiety as to finding quarters for the night, which is apt to spoil the best hours of the evening; so by all means let there be "cabin" accommodation on board. Some hardy canoeists are content to cover the well with the hatches, etc., and so go to sleep "anyhow." This is not quite as miserable as it sounds, and if by ill luck one need sleep on board in such a wind that no kind of tent can be safely erected, it will be the only plan possible. A square of oilskin, some 2 feet across should cover the opening of the well. This will also be handy to keep out rain if the canoe is left afloat for a time.

But for comfort, something more than a cover for lying down under is required. One must be able to spend the evening in

shelter, in an easy position, with means of cooking, reading, etc. By erecting a little tent over the well, these objects can be secured; and, with a little ingenuity, the interior of the canoe may be made a very snug little cabin indeed. Thus, so long as there is a bit of beach to haul up on, or a reasonably quiet anchorage, the canoeist is independent of all men and all things. Although the day's journey may end in the darkness, perhaps of a cold rainy night, in a few minutes the tent is up, the lamp is lighted, and the preparations for tea are under way. When this is disposed of, and the duty of washing-up performed, the interval till bed-time may be filled by writing up the log, or letters to friends at home; the course for the next day may be studied, the piece of chart required may be got out, and any bearings, etc., noted. This, with reading, and perhaps working up sketches taken during the day, stropping a block or two, or any other little jobs, will bring even a longish evening to an end; after which, with a farewell glance at the sky, the barometer and the riding light, the crew may turn in. Sound sleep will be promoted by well securing all gear, especially the rudder, against rattling and shaking about. If afloat, see the boat is securely anchored, and if the weather is threatening and the berth an exposed one, take in a reef or two overnight, and see everything clear for getting under way in a hurry. Even when I have no intention of sleeping on board I like to carry the little tent, with a spirit-lamp, a tin or two of provisions, coffee, etc., in case of being benighted, or finding all inns full, as often occurs on Thames in summer. Then if one gets left at top of a sand at night, as has happened to canoeists before now, one can be as comfortable as need be till the tide returns, instead of passing the dark hours in cold and hunger, impatience and misery. Also if a very early start is to be made, much time is gained by being afloat and on board over night.

To carry a tent, to be set up on shore, does not answer these purposes at all. It is very good fun to go "Camping out" with two or three canoes, but I don't consider it a part of canoeing, and have no more intention of describing a lot of camping outfit

in a book on canoeing, than of incorporating with the latter a work on angling, shooting, or sketching from nature, because forsooth, rod, gun, or pencil may be wielded in a canoe.

Certainly, sleeping in the canoe is more secure against damp and draughts than in any tent, while the difficulty of finding camping ground, the amount of time occupied in pitching and striking camp, and the necessarily unguarded state of the canoes while the men are asleep in tents, renders it impossible to regard "Camping out" as a substitute for sleeping on board.

However, if two or more canoeists are cruising together, especially if long halts for sketching or angling are to be made, a little tent may be carried as a "sitting room," the canoes being used as "bed-rooms." Then if they have to separate, each is independent, and no man feels bound to continue the cruise against his will, lest he prevent the others from going on with it.

Two canoeists of my acquaintance used to lash their canoes alongside if afloat in still water, or lay them in the same position on shore, and by an ingenious arrangement of flaps, form a "passage" 2 feet square between the tents, in the midst of which a table was rigged up, at which meals were sociably enjoyed. For a solitary canoeist I should regard camping as simple misery, and when alone am unwilling even to haul the canoe ashore at night, for sleeping on board, but delight in the feeling of security obtained by lying afloat, of course with a proper anchor light if in the course of vessels.

A flat-floored canoe, of 27 in. beam or more has ample space for sleeping; while the very fact of its being no larger enables one to so pack oneself in, that rolling out of bed is impossible. In places where no sense of danger interfered with repose, I have slept through quite a little sea, as comfortably as in any small yacht's berth.

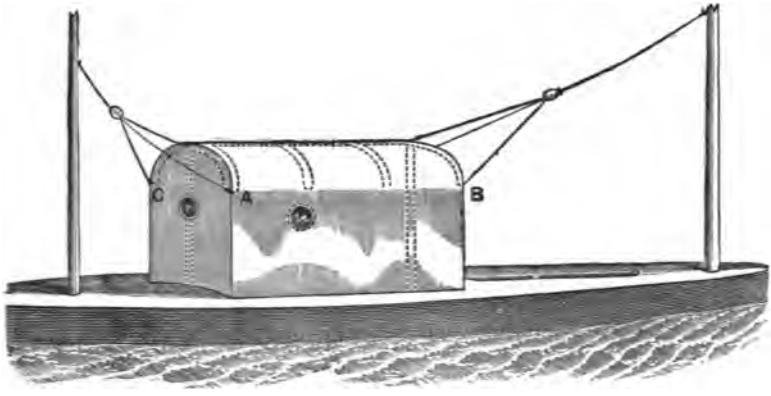
Of course, in living aboard or in tents there is a great economy as compared with hotels. In the former case there is nothing but the cost of the actual food and drink, plus a penny

---

(For shore tents, see "Yacht and Boat Sailing," also *Field*, of May 13th, 1882.)

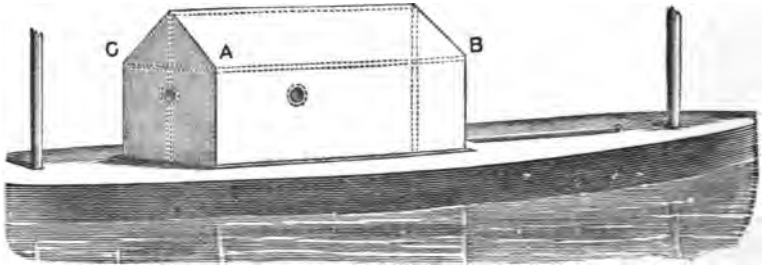
worth of methylated spirit; in the latter, there is the bill of several shillings a head, besides the cost of housing the boats for the night.

The next thing is to describe a canoe-tent. As with rigs, so with tents, too much simplicity defeats its object. The simplest possible tent is a square of oiled stuff, lashed somehow over spars, paddle, etc., to form a roof. This is troblesome at best, and seriously so when afloat. A tent should be quickly and easily set up and taken in, if any pleasure is to be found in its use. A simple ridge tent does not give enough room for one's shoulders, so the sides have to be extended in various ways. A height of 3 feet or more from the floor of canoe is required, according to the man's height when sitting. The tent will therefore stand some 2 feet above the coamings.

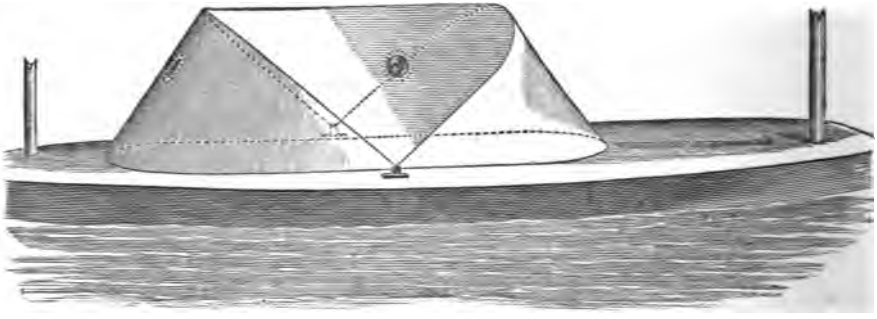


A successful form of tent is made with a rounded top, extended by arched battens of steamed wood. This may either be set by the main and mizen halliards, attached to bridles, or better, on two tiny bamboo "masts," one at each end of the well with ridge pole between, which may be the boat hook. By lowering the halliards in the one case, or by having the masts made to "telescope" in the other, the "eaves" A, B, C, in sketch may be got down to deck, the sides of tent reefed, and so a low cover obtained, for use in wind, but, of course, only for lying

under. The sides may be extended by a light rod along each of the "eaves," as A, B, kept apart by a stick at each end, A, C. This gives a gable roof, which may be reefed like the other.

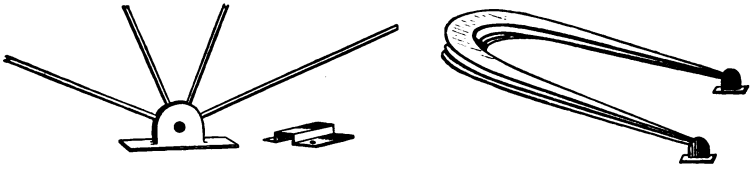


The bottom of the tent should be hooked to screw eyes at the corners, and here and there along the sides, and a flap of 2 inches should be left all round to keep out draughts. A design of tent which I have received, appears good. It consists of four light iron arches like those of an awning. Two of these lie on deck, forward and aft, and the two intermediate ones stand up at an angle. The tent is secured to the arches at top and down the sides by loops of tape. The arches are all four equal, and are hinged together at the midships of the well to a detachable slide.



It is claimed for this tent, that it can be got on deck, and the slides fitted in a couple of minutes, and that, this done, it can be raised in a second, and lowered, either forwards or aft, in about as short a time. The fore and after arches are kept down

by a brass "button" on deck, besides which and the slides there are no fastenings whatever. The tent is kept on the arches, and



in this form can be stowed under the after part of the coamings. It obviously cannot be reefed. Its advantages are simplicity, quickness of working, and that it can be instantly lowered in time of danger, leaving the canoe clear for getting under way at once.

The material for all these tents is stout calico, water-proofed with boiled oil. The tent should be damped lightly but evenly with fresh water, and then gone over with boiled oil in a large brush. A second coat should be given before the first gets quite hard. A little terebinth with the oil makes it dry better, and less apt to be sticky. Macintosh has been used for tents, but it is very dear, not durable, and has a strong smell. Also the seams in it are difficult to make waterproof. It can only be done by sticking a kind of tape along them with indiarubber solution, a messy and unsatisfactory job.

A little glass window or spy-hole in each side and end of the tent is a nice addition. Circular holes, say 1½ inch diameter, should be cut in making the tent, and bound with narrow tape. The glass should be stout, about ¾ inch larger all round than the hole, and have a couple of holes in the edge to sew it to the stuff outside the tent. A narrow tape should be sewn round over the edge of the glass, not coming quite so far in towards its centre as the edge of the stuff inside. Thus any water that lodges round the edges of the glass

will run off outside, not in. In placing the holes, see that the tent will not fold at those points in stowing.

An air-bed will be found best to sleep upon, and will roll up into very small compass. A big soft coat of the "deerstalker" form, a rug, and a blanket-bag for the feet will be found sufficient for warmth. The clothes bag forms a pillow, or an air-pillow may be carried. It is good to wear a soft flannel shirt and trousers for sleeping in, which should be reserved for this purpose only. There is a sort made without any buttons, called, I believe, "pyjamas." If one expects to be disturbed, or have to turn out suddenly, it is some times well to turn in "all standing."

Before going to sleep one should see "all clear" for a quick turn out in case of need, and by all means make sure that the boat is well secured, and that the riding light, if in use, is burning well and brightly.

The end of the cable may be brought into the tent, so that if one's rest is disturbed by any horrible suspicion that she is adrift, dragging anchor, etc., one may reassure one's self by the feel of the line.

The cook's department on board may be left to the discretion of that valuable member of the crew, but the captain should insist on the general rules of the ship, as to simplicity and lightness, being observed. There are plenty of excellent things in tins, ready for eating cold, which with a few tins of soup, Irish stew, curry, etc., for warming, and some tea, or coffee-extract, with condensed milk, will be found to give a good variety of meals. Eggs, chops, sausages, etc., can be obtained from shore when convenient, as can bread, but a good store of biscuit should be always in reserve. A little marmalade, jam, etc., must make up for the absence of puddings and tarts, and some tins of sardines, potted meat, etc., may be added. A few bottles of beer or wine, well packed in straw cases, may be shipped, with one bottle of rum for cold or wet occasions, etc. A stone jar may be carried, and filled with draught beer from shore; and a neat water keg or tank must not be forgotten.

About the most powerful of spirit lamps is one called the

"Rèchaud;" it has a sort of rose top, through which the vapour of the spirit ascends when heated by the flame of the wick, and catching light from it, forms a great fan-shaped blaze, boiling water very quickly and with a small amount of spirit. A little less powerful is the "Cyprus," which has a different shaped top on the same principle, but with the important addition of a screw, which by raising or lowering a tube outside the flame, regulates its size. With this, anything can be kept warm or gently simmered, as is often required, but which cannot be done with the "Rèchaud."

There are also little brass affairs containing a sponge covered with wire gauze, upon which the spirit is poured and lighted. The best of these have three legs to support the kettle, and are very handy in addition to the "main" spirit lamp, if the cook finds a single flame insufficient for carrying out his ideas.

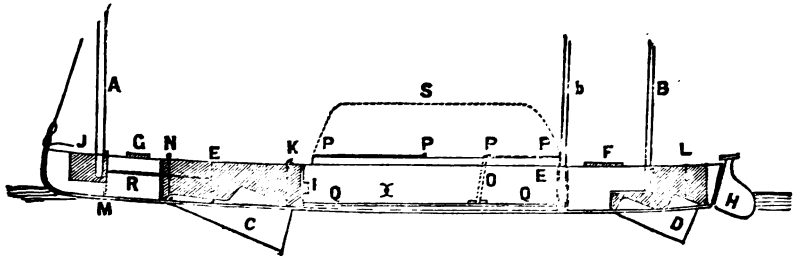
Both "Cyprus" and "Rèchaud" are sold with a tin boiler, which is very good, but may be improved by the addition of a lip or spout, as it is a nuisance to have to take off the lid whenever a little hot water is wanted.

The spirit should be kept in a tin bottle with screw top, and a few wicks in a watertight case. The cook will also require to be supplied with some dish cloths and a bag of "cotton waste," which will also be handy for the man who has charge of the ship's lanterns. A small tin frying pan, with folding handle, should be added to the list. The baler must serve for "washing up." One good big stoneware mug will serve for all drinkables, beer, tea, soup, etc., or a glass may be added for the use of visitors. Two iron plates, knife, fork, and a brace of spoons—big and little, complete the list of hardware, with the exception of corkscrew and tin opener. A few napkins to use as table cloths are handy, as they keep crumbs and things from getting about, besides making things look neat at meal times. The table will be the hatch lid, with the after hatch as sideboard. All this applies to meals at anchor, under way is another thing. A flask and a few biscuits should be stowed within reach of the seat, or in rough weather the crew may come in for fasting.

This, added to the gear and one's bag of clothes, sounds an enormous list of things for such a tiny craft. Let us see how they may be stowed. I give the arrangement of things which I have used, but of course it may be varied and improved upon.

If the reader will refer to the accompanying sketch, he will easily understand the method of stowage described :—

ACCOMMODATION PLAN OF CANOE 14 FEET 6 INCHES LONG.
SCALE ¼ INCH TO 1 FOOT.



A Mainmast.
B Mizenmast.
b Mizenmast for large mizen.
C Fore Centre-board.
D After do.
E Watertight bulkheads.
F After hatch.
G Ventilator hatch.
H Rudder.
I Foot-yoke.
J Mast-trunk.
K Fore Centre-board line.
L After Centre-board line.
M Drain to mast-trunk.
N Rod for lifting out fore Centre-board.
O Back-board.
P Well-hatches.
Q Floor-boards.
R Spar-deck (occasionally fitted to canoes).
S Position of tent.
x Midships.

In the locker abaft seat is a big square canvas bag, holding the bed things, strapped together, and also containing a smaller bag with one's change of clothes, etc. The tent is stowed around this, and there is just enough room left at the top for one's coat when taken off, and a few other things. Aft of the locker is a little deck hatch, inside which are found the riding and sailing lights, reserve of oil, spirit, etc., and a few bits of spare rope, etc. Forward of well, on the starboard side, is the water keg, and a

box containing the cooking things. On the port side, separated from these by the centre-board, is a basket containing the tinned meats, bottles, etc. The salt, etc., live with the cooking things. The box of cooking things is so arranged that it can be set up amidships, opened, and the spirit lamp lighted in the box, so guarding against upsetting it. This is handy when a cup of tea, etc., is called for while sailing. In the sides of the well the anchor and cable, hatch covers, waterproof coat, chart case and such things are arranged, the aftermost, and therefore most accessible, being the compass on one side and a bag containing the above-mentioned biscuits and flask on the other. The plates are in a leather loop abaft the back-board, and on each side of the back-board is a stout "fender," for locks and lying alongside anything.

By lifting out only four things—the large bag, the case of stores, the cookery box and the water—the canoe can be lightened quickly for portage, etc., and by putting a few more things into the bag, and taking out the tent, everything can be taken home, and the canoe reduced from cruising to home sailing trim in a few minutes.

A pair of light wheels are often carried, but are not very useful for travelling, as they are useless on rough ground, while on grass the canoe will drag without them. Where there are smooth roads and paths, help can generally be had to carry the canoe. If, however, one lives a few hundred yards from the water, a light "canoe carriage" may be useful to convey the craft to and from the house; but in this case it need not be made to stow on board. If made a good size the canoe can be conveyed a considerable distance with ease. I would have a regular cradle for the middle of the boat, padded to avoid chafe, a good-sized pair of well made wheels and, perhaps, even springs. With these it would be only a matter of patience to convey the boat for miles, and if much required the apparatus would soon repay its cost.

CHAPTER VIII.

Dress.—The dress worn afloat will naturally depend on the locality, and the nature of the work to be expected. On the Thames, etc., an ordinary boating jacket, "sweater," and scarf, with flannel trousers or knickerbockers, and a cap or straw hat, according to wind and weather, will be the most appropriate, and and is perhaps the most comfortable dress possible. Knickerbockers are better than trousers, both on board and for wading; they should be double-seated and made without buckles, an elastic cord half-way round being used at the knee instead.

At sea, this dress would be conspicuous, because unusual, and ordinary yachting costume is more appropriate. If the canoeist is a "seaman" it is rather an advantage that his dress should declare the fact. Suppose, for example, one is asking for any information from local pilots or fishermen, if they take one for a "landsman" they will probably attempt to translate their remarks into "shore" language, at the total sacrifice of intelligibility. Again, in a harbour, if you have to cross the decks of any vessel to reach your craft, your appearance will excite surprise if in landsman's attire; while, as a sailor, no one thinks anything of it.

The "landsman's" dress leads to one's receiving all sorts of unnecesary offers of assistance; one is warned and cautioned against this and that till one is almost frightened; and one is regarded by extortionate "boatmen" as a prey specially delivered into their teeth. At the same time I would not have a canoeist rig himself out like the owner of a 200 tonner, "*Est modus in rebus.*"

In some places neither rowing nor yachting dress is as suitable as a Norfolk jacket and knickerbockers of soft but strong flannel or home-spun.

In any case a flannel shirt should be worn, and warm socks.

A duplicate working suit, with the exception perhaps of the coat, should be carried, also a shore suit carefully packed by itself in a bag or large handkerchief. If made of blue cloth or serge, it may be made to act two parts, when topped by a yachting cap it has a sufficiently nautical appearance, while under an ordinary hat it does for going "inland."

There are some patent waterproof collars, which last a long time, and can be washed with soap and water; one of these will last a cruise, if only required for going ashore. In addition to these should be carried a change of shirt, socks, etc., necktie, handkerchiefs, and a brush, comb, scissors, etc. These with soap and a sponge, a towel or two, nail and tooth brushes, and a little looking-glass, will complete the list of "toilet requisites." It is generally best to get shaved on shore, but shaving tackle may be carried, and now and then may be very useful. A night-shirt should be carried for sleeping on shore. This, with the clothes, dressing things, etc., should be in a light waterproof bag, which stows with the bedding in the great after-locker-bag, and thus is doubly protected from damp. For going ashore only the smaller bag need be taken out of the boat. A small but good clothes brush should on no account be omitted, for the cleaning and tidying of clothes, etc. Of course everything should be aired and shaken every day in dry weather, or may be hung over the boom for an hour or so when at anchor.

Flags.—It adds greatly to appearance to have flags of correct size and description, nothing looks so lubberly as to see a canoe sailing about with a jack or an ensign at her masthead, as if she was signalling for a pilot. If a member of a canoe club, or any yacht or sailing club, one should carry a burgee, and observe the custom of always flying the burgee of the club at whose station one is lying (of course if a member of it). Burgees for a canoe are lightest and smartest of silk, but bunting will do. The size

should be very carefully judged; about 12 inches is the general length for a canoe. An ensign should be on board, to be set at the mizen when at anchor, and at the peak if carried underway, which should be done on Sundays, etc., and at regattas. In foreign waters the ensign should be carried at the peak all the time, to show one's nationality. For this purpose a rather small ensign, say 20 inches "fly," may be used stitched to the sail, or fastened by two little elastic loops.*

The ordinary size would be 30 inches, more or less, and would look very grand in silk.

For racing, of course, you will have your colours, on a square flag of regulation size, carried at the mainmast-head.

Flag-halliards are out of the question, except perhaps on regatta days, so each flag should have a little staff to which it is fitted with rings, so as not to get "wound up."

Try to get the flags down at the right hour, if lying at anchor in any public place. At the same time, too much fussing with flags looks childish and unbusiness-like.

Neatness.—The greatest possible neatness and cleanliness should be observed in a canoe, without which there is no chance of comfort in so small a craft. Water should not be spared either on deck or below, every corner being frequently washed out, and no mess being allowed to accumulate in the bilges, limbers, etc. The boat will last much longer if this is well seen to. I find it is possible to keep much cleaner in a canoe than

---

* It is necessary to remind non-nautical readers that the British flag is NOT the jack, but the red ensign. The blue and white ensigns are only carried by H. M. Fleet, and by registered yachts belonging to clubs, having permission under Admiralty warrant to use these colours. The same applies to the red ensign if any device be put upon it. Thus, the only ensign a canoe has any business to carry is the red ensign without device.

It is easy for anyone who can paint at all to make his own burgees. The designs must be painted on silk with ordinary artists' colours, using "Roberson's medium," and no oil or turpentine besides. They will take some time to dry, but when dry will not crack or alter, and the unpleasant "blur" round the edges which occurs with oil will be entirely avoided. Flags thus made will cost next to nothing to make, but would cost 8s. or 9s. each to buy.

in small yachts, probably because all things are lighter and smaller, and so there is less "detrition." Probably also the absence of ballast has something to do with it. It seems even as if small canoes were cleaner than big ones.

The principal causes of "mess" appear to be crumbs and fragments; mud, etc., from the feet; hair and "flue" from rugs, etc., dust blown from shore, and so on. The first of these must be kept in check by using a cloth to catch the crumbs, and carefully picking up any bits that escape this. Extreme care as to not getting on board with muddy feet will do much to diminish dirt. The boots or shoes worn ashore should be taken off on coming aboard, and stowed in a separate bag.

If necessary to get on board through mud, the best plan is to take off one's shoes and socks, and so reach the boat, and to wash off the mud from one's feet before putting them below. For the rest, plenty of washing and cleaning out all holes and corners with a knife point will keep the craft sweet and wholesome. From the first the formation of corners and recesses likely to act as dirt-traps should be avoided.

Work on Rigging.—No trouble should be spared on hull or gear to make everything look thoroughly neat and shipshape. No ends flying about, no fishermen's hitches in the rigging, but neat coils, and neat splices, properly tapered and served. Anyone can learn the few absolutely necessary bends, hitches, splices, etc., in a few hours. The most important are "reef-knot," "sheet-bend," "figure of eight," "bowline," "clove-hitch," "timber-hitch," "eye-splice," "grommet," "to strop a block," "to put on a seizing," to "whip an end." At all events, do not start to sail without knowing some one good way to make fast a rope. One is continually required to make fast one thing or another, and one's own safety, or that of the boat, or possibly that of other people or other craft, may depend on its being efficiently done. For instance, I have had a line thrown me from the shore by a couple of boating men, who kindly volunteered to tow me up a rapid, and a knot joining two pieces of the rope has "drawn" just below the rush of water. If it had done so a little later the

boat must inevitably have been smashed, and her occupant very possibly drowned, while a non-swimmer would have been exterminated to a certainty.

Double Canoes.—Any canoe of 15 feet or more in length may easily be so fitted as to be used occasionally for two persons, by removing the hatches, steering gear, etc. The aftermost occupant of the boat will then sit in the "locker" end of the well, and the other further forward, having a temporary back-board fixed about 18 inches forward of midships. Temporary steering gear may also be fitted, by attaching a loop of cord to each rudder line, to take the feet of one or other of the crew, or in a more elaborate manner. A regular "two-man canoe" has these same arrangements in a permanent fashion, with a length of 17 or 18 feet. The advantage of these canoes is chiefly increased paddling speed, and great convenience for portage, as the crew can carry the craft without assistance.

They are not very sociable craft, as the passengers are in the worst possible relative position for conversation, which indeed is almost impossible unless the canoe is large enough for the foremost "hand" to turn round when he wishes to "hail the afterguard." Sleeping on board, unless in a very large canoe, would be impossible, and sailing, except with fair winds, is poor work, it being difficult to canvass the boat properly while allowing 6 feet between the sails for the crew. Canoes for three and for four paddlers have been built, but are little used.

The two-man canoe is generally called a "double canoe," but this name more properly applies to those craft which are composed of two hulls, attached to each other by a framework. The French "perissoire" is of this type, and is navigated by one man seated on a chair above the centre of the framework. A better plan is to have a well and seat for one man in each hull. Canoes thus fitted will carry sail to any extent, and extraordinary speed in running and reaching has been attained by them. For general work, cruising, turning to windward, etc., all such contrivances are out of place.

Canoe-boats.—The excellence of canoes in a seaway, as compared with small boats, has led many people to build "canoe-boats," that is craft of 17 to 22 feet with the deck, ends, and general style of a canoe. They are, however, always of greater proportionate beam than a canoe, and though excellent craft, do not perform such wonders as the analogy of a real canoe would lead one to expect. It remains to be seen what would be the success of an enlarged model of a canoe, proportioned, rigged and handled in canoe fashion. Such a craft might be 21 feet by 4 feet 3 inches, with a depth of 2 feet inside, and if her crew could be got to work together as unanimously as the two hands of a single canoeist, she would probably carry everything before her in the small boat racing classes.

A lead keel of 5 cwt. or so might take the place of the inside ballast used by racing canoes, and this, with a couple of heavy centre-boards would make her very stiff, but it would be the stability of a canoe, and not that of either a yacht or a sailing gig. She would require great smartness in handling, but not more than is shown in the sailing of some fishing luggers, and other craft in which the sails are large in proportion to the displacement and beam. Perhaps, however, with a canoe, as with toy sailing boats, her proportions, etc., will not answer if the scale is enlarged beyond a certain limit.

Expense of Canoeing.—A good canoe should be built for £15 to £25 according to dimensions, materials, design, locality and builder. A perfectly sound second-hand one should cost from half to two-thirds of this sum. The materials for sails, tent, etc., will come to about £3, and the work to them, if one gets that done instead of doing it, about the same amount. The further outfit will depend on the things required, but it is bad economy to go without really useful articles, or to use anything short of the best quality. The housing of a canoe will cost from a shilling to half-a-crown a week.

If taken home for the winter, something off this will be saved; besides which one can then do any varnishing, repairs, alterations, etc., one's self at leisure.

Danger of Canoeing.—This has been partly treated of under the subject of "upsets" and of coasting. If a man can swim, and uses reasonable caution, not venturing on exploits beyond his skill, canoeing is as free from danger as any other out-door exercise.

The loss of an experienced canoeist by drowning or other accident afloat is almost an unheard of thing. The melancholy accidents of which one hears, almost always happen to men of little skill in canoeing, who have ventured into places, or played tricks of which their ignorance prevented the danger from being perceived before-hand, or properly dealt with when it arose. The fact that anyone, without previous experience, can paddle pretty fairly, leads many to attempt canoeing who have no skill of watermanship, and a few of these are unhappily lost before that skill can come to them. To all such beginners I would say, remain in safe waters or within reach of help till you have gained skill in handling your craft, and in the mean time lose no opportunity of learning all you can from older hands. Also, if a non-swimmer, learn to swim at once; a very little swimming is enough for regaining and righting the canoe; and if physically incapable of swimming, through accident or deformity, have a life-belt *on* whenever alone on deep water.

Never bathe from a canoe at sea without lowering the main-sail, and so arranging the mizen centre-boards, etc., that she cannot sail away from you. I have had a canoe sail away a hundred yards in almost a calm, under the influence of some imperceptible "chill" of air, through the mizen sheet getting adrift when hove-to under both sails, and might have had trouble to catch her had she gone on; while as for land, a swim of two miles and no clothes at the end of it is a poor prospect. Of course if subject to cramp, never bathe alone at sea at all, nor indeed unless you can swim long and easily.

Do not think every upset you hear of or see is an "accident." Dozens of upsets take place which would not if the canoeists did not choose. In experimenting, and often in racing, canoeists, to whom a capsize is no danger, and in summer, if suitably dressed,

not even an inconvenience, deliberately chance an upset in testing stability, or by carrying on to weather a mark, or to overhaul an opponent. These are no more "accident" than is a header off a bathing place.

Loneliness.—Some people find fault with canoeing as a solitary and unsociable way of travelling. Now, in the first place, if two or more canoes are together there is no loneliness or want of good company. At the same time men are not so much kept together as the crew of one yacht or boat, and so are less likely to get tired of each other's society, and are free to separate at will. A cruise of several canoes in company has been described as "a continual regatta and picnic."

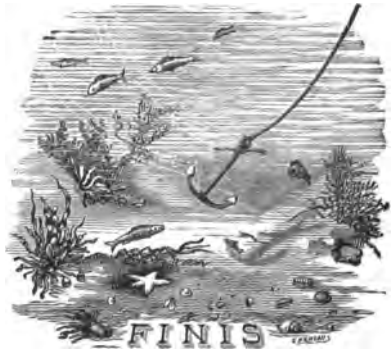
But even if alone in the canoe there is seldom any oppressive sense of loneliness. Plenty to do in the management and care of the boat prevents this feeling. Besides it often brings rest to the mind wearied by the pressure of business or of society, to be quite alone, without any thought, for the moment, about other people at all.

And then there is not so very much solitude after all; what with meeting old friends and making new acquaintances; the water-folk of all kinds, gentle and simple; the people who ask questions, often, alas, so unintentionally comical, about the little craft and her fittings, sometimes out of mere curiosity, and often with an idea of following her example; all these give interest and variety to a single handed cruise; and, failing these, a man must be poor company who is not good enough company for himself.

Conclusion.—I have heard canoeing called "a waste of time," but it is difficult to see in what sense this is more applicable to canoeing than to other amusements. It does not lead to any kind of frivolity, vice, or intemperance, but is rather opposed to all these. It encourages strength and activity, both of mind and body; and, especially when practised alone, deserves to share with angling the title of the "contemplative man's recreation." The canoeist, brought to face the beauties and the terrors of nature in silence and alone, is, I say, more likely to turn his

mind to grave and worthy thoughts concerning these things, and the Ruler of them, than he who is hurried along in the distractions of a crowd in trains, coaches, and hotels. Moreover, good work has been done by canoeists with canoes, both in geographical, scientific, and missionary service. The canoe fleet has also contributed largely to the defence of our country in the Royal Naval Volunteers, of the patriotic services of which force it is impossible to speak too highly. Canoeing, while open to those of moderate means as well as to the wealthy, has never been vulgarized, and the flags of our canoe clubs are deseredly regarded as a passport to "society afloat."

Such, feebly indicated, is the worth and the honour of "this our craft" of canoeing, and I pray all those who may use this little book as a guide to their first attempts, not only to maintain and be worthy of, but by all means in their power to promote this good name and repute of it, "*Spartam nactus es, hanc exorna,*" and so take my leave of them, commending them to good fortune and fair weather.



APPENDIX A.

EXPLANATION OF SOME OF THE PRINCIPAL NAUTICAL TERMS EMPLOYED IN THIS BOOK.

Fore.—Towards the bow.

Bow.—The forward end of boat, especially the side of it.

Aft.—Towards the stern.

Quarters.—The after part of the side.

Beam.—The width of a boat.

Shear.—The rise of a boat's ends at top above a horizontal line.

Camber, or Gamber.—A similar rise in a boat's bottom.

Starboard and Port.—The right and left sides of a boat. A vessel with the wind on her *right* side is on the starboard tack, and *vice versâ.*

Stability or Stiffness.—The tendency of a boat to resist being forced out of an upright position. A boat deficient in this quality is said to be "crank," and is very unsafe, *especially for sailing.*

Yard.—A spar placed across a mast to support the "head" or upper edge of a sail.

Boom.—A spar to extend the "foot" or lower edge.

Luff.—The foremost edge of the sail, nearest to the wind (see "to luff.")

Leech.—The after edge of a sail.

Peak.—The upper after corner of a sail.

Clew.—The lower after corner.

Throat.—The foremost upper corner.

Tack.—The foremost lower corner, also the rope that secures this part.

Halliard.—The rope by which a sail is hoisted.

Sheet.—A rope attached to the boom, or to the clew, by which the sail is "trimmed" or regulated as to its position.

Lifts or Topping-lifts.—Ropes from the masthead to a boom, for raising it or preventing it from dropping.

Down-haul.—A rope for pulling a sail down.

Luff, to.—To turn a boat's head more towards the wind.

Bear away, to.—To turn from the wind.

Tack, to.—To turn a boat round towards the wind, until it blows on the contrary side to before the manœuvre. Sometimes called "to stay" or "to go about."

Jibe, or Gybe, to.—The wind being aft, or nearly so, and the sail on one side, to turn the boat so that the wind comes on that side, when the sail has to swing across the boat.

Bring-up, to.—To stop and secure a boat, generally by anchoring.

Way.—A boat's movement through the water, as "head-way" "stern-way," "lee-way." A boat in motion is said "to have way;" if sufficient for steering, then "steerage-way;" if considerable "strong way" or "good way." She is also said to have "way on her," and inversely to be "under-way," when in movement. So to "get under-way" is to set the boat in motion.*

On a wind, or, by the wind.—A course, as near as possible, towards the direction from which the wind blows, also called "close-hauled."

Off the wind, down wind, or free.—A course away from the wind.

Reaching or sailing along the wind.—Sailing any course intermediate between the above two.

APPENDIX B.

CANOE DESIDERATA.

I add a list of these in hopes to stimulate the zeal of inventors :—

1. A thoroughly efficient means of either (*a*) steering without rudder, or (*b*) entirely detaching the rudder, and re-shipping it while afloat.

2. A lamp that will take up little room, will not blow out, will show all round white, or red and green, and burn candles, or something cleaner than oil.

---

* Generally "getting under way" is used starting from moorings or an anchor (whence the erroneous spelling "under-weigh,") while if the boat is hove-to, or otherwise stationary, though free, to get in motion is "to get way on her."

3. A well cover that will take up less room than hatches, and answer as well.

4. A compass small and compact enough for canoe purposes, and yet to act efficiently in all weather, and which can be used when battened down.

5. A chain or cord for centre-boards, that will work in a ½-inch trunk, bear a weight of 20 lbs., not chafe or rust, and which can be fastened to the centre-board without adding to its thickness.

6. A good pump or other means of getting out the water without opening the well.

7. A rust preventer which will suit all iron, from a sail needle to a centre-board.

APPENDIX C.

REMARKS ON RACING.

A canoe cannot be paddled as effectually as a boat can be sculled, and for sailing, pure and simple, is inferior to a good sized sailing boat, such as one man can handle.

Her superiority to these depends entirely upon her power of utilizing both means of propulsion, and upon her handiness in lifting and carrying about.

If, therefore, canoe racing is designed to bring out the best qualities of canoes, it is obviously undesirable to allow separate types of the boats to be formed, of which one is only fit to paddle, and the other only fit to sail. These are both departures from the proper field of canoeing, and not particularly successful invasions of the territory of the sculling boat on the one hand, and the sailing boat on the other.

Rightly designed racing classes and races should secure that the canoe should win most prizes that is best all round. To combine paddling and sailing in every race would be hard upon men of small physical powers on the one hand, and, on the other, upon good paddlers whose skill in sailing was small. I should, therefore, suggest that there should be three kinds of races, about equal in number—Paddling Races, Sailing Races,

Paddling and Sailing Races. In the first I would allow no canoe to enter that could not sail round a course to windward and to leeward, and in the second no canoe that could not be paddled with an ordinary double paddle, say a mile in twelve minutes in smooth water. These tests should be performed to the satisfaction of judges appointed for the purpose. This would rapidly put a stop to the construction of racing machines of either type, at the same time it would bring racing into accordance with the actual conditions of canoeing, and secure that the canoe a man would build for the races, would be just the best possible canoe that he could have built if racing had not been proposed.

Canoe chasing (*i.e.* hauling over obstacles) should also be confined to "practical" canoes, either by combining it with both paddling and sailing, or by limiting it to boats which had passed both "tests."

No trouble would be given by these tests, as they could be taken in the course of a race. The owner of a new canoe would in his first paddling race receive a "certificate" of having paddled a mile in the time required, and in his first sailing race, if having sailed fairly to and from the wind. Very few restrictions as to dimensions, fittings, or ballast would be necessary, as these would be kept in proper bounds by the requirements of the races themselves, precisely as they are by the practical requirements of cruising, and thus the greatest possible liberty would be left to the exercise of ingenuity and skill.

If any canoe club existing, or about to be formed, would carry out these principles, it would at once sweep into its net all the numerous canoeists who now say "I'll not build a racing boat, she'd be no use for anything else."

For instance, on the Thames in summer you meet a canoe with some kind of a sail every few miles, and yet in the canoe races on the same river, half a dozen is a good entry, whether for paddling or sailing. But the half dozen entries do not consist of the canoes you meet on the river, nor do you often meet on the river the canoes which enter for these races.

Probably a single class would be found to answer better than more, as it would enable the club to throw its whole strength and resources into the encouragement of one strong class, instead of frittering them away over two or more weak ones. And all really "practical" canoes could be brought into a single class without difficulty under the "test" system, as opposed to that of measurement, which cannot be made to express rightly the handiness or unwieldiness of canoes.

Some such rules as the following might be suggested:—

Paddling Races.—Canoes entered for these races shall not exceed 17 feet in length on waterline, or be of less than 27 inches beam, nor than 9 inches depth from gunwale to rabbet of keel at midships. The keel shall not be less than 1 inch in depth. No canoe shall compete that cannot in ordinary weather, in cruising trim, sail a fair course to and from the wind, without aid of paddle or current.

Sailing Races.—Canoes entered for these races shall not exceed 17 feet in length on water line, or be of more than 30 inches beam or than 12 inches depth. The keel shall not exceed 4 inches, and if a centre-board be carried, then 2 inches. Centre-boards shall not exceed half the length of the boat in length (united if more than one) nor 16 inches below the keel in depth when lowered, nor if of metal, a quarter of an inch in thickness. When hauled up they shall be entirely within the canoe. No metal weights shall be below the garboards, nor be permanently attached to the canoe. No canoe shall compete that cannot be paddled, in cruising trim, one statute mile in still water in 12 minutes.

Cruising Trim.—When a race is ordered to be paddled or sailed in cruising trim, all centre-boards, hatches, bulkheads and floors must be on board and in their proper places. A double bladed paddle must be carried, also an anchor of suitable size for the canoe. All spars and sails must be on board, and be of not greater length than can be stowed within the canoe below deck. Not more than 56 lbs. or less than 28 lbs. ballast *or other weight* may be carried, exclusive of centre-boards. Life saving gear shall be carried by each canoe. All races on open water shall be competed in cruising trim.

It would be a good thing to have a "challenge" prize on some such conditions as the following:—

"The prize to be assigned to the member who wins most races in one canoe during the year, but that not more paddling than sailing races, nor more sailing than paddling, may be counted in favour of any competitor. Paddling-and-Sailing Races to count as half a race each way. Ties to be decided by greatest *total* number of races, and if there be still a tie, it shall be decided by a Paddling-and-Sailing Race."

APPENDIX D.

THAMES WEIRS.

Every summer some few lives are lost at the different weirs on the Thames, and there is a periodical outcry in the papers that "something

ought to be done." Now most of the danger from the Thames weirs arises from the fact that it is only occasional. During dry fine weather most of the weirs present no danger at all, you can paddle up close to them from above or below, and, in fact, do what you like with them. At other times, even though no local rain may have fallen, a freshet from above converts these harmless affairs into destructive torrents. If only reasonable and careful people used the river, the weirs would get no victims; but as it is impossible to forbid persons of any amount of folly or incapacity from going afloat, and (more's the pity) taking ladies, children and aged persons with them, all that can be done is to try to minimise the peril. The present "Danger" boards are of little use, being always there, they are unheeded. What is wanted is a red flag—the universally recognised signal of danger—to be hoisted on all such places when in an unsafe condition, *and then only*. These would be attended to, which the boards are not. The hoisting of them would not add perceptibly to the labours of the men who at present attend to the weirs.

At the same time the public can defend itself to a great extent by observing a few simple precautions.

Never on any account get into the same boat with a fool, drunkard, or excitable person; avoid such as you would avoid a mad dog.

Never let there be any discussion in a boat as to how she is to be managed. Let *one* command the boat, remembering that an indifferent order promptly carried out is worth all the clever plans in the world, if argued over at the moment of action.

Lastly, let there be no singing, skylarking, or nonsense aboard when passing a difficult place.

ADDENDA.

PAGE 16.—The mast purchase shown is used instead of a forestay, when the mast is too far forward to admit of the forestay clearing the fore end of yard.

PAGE 38, lines 7 and 9 *from foot*, and page 41, second line, read "topmast" for "mast" in "The heel of the mast,"—"the mast sagging to leeward,"—"roller to take the mast."

MERSEY SAILING CANOES,

AND

NEW BRIGHTON SAILING BOATS

BUILT BY

SAMUEL BOND,

MERSEY STREET,

BIRKENHEAD.

Mr. SAMUEL BOND will be pleased to send Estimates to Gentlemen requiring small Sea-going or River Yachts and Sailing Boats of all descriptions.

Builder of the celebrated Mersey Canoes, unequalled for Paddling and Sailing in the open sea.

Boats of all kinds, either for Pleasure or Trade, built for abroad.

ENQUIRIES SOLICITED.

BY APPOINTMENT TO THE QUEEN.

R. J. TURK,

Boat, Punt & Canoe Builder,

THAMES SIDE, KINGSTON.

HEAD QUARTERS OF
THE ROYAL CANOE CLUB.

BOATS AND CANOES of every description built on the shortest notice, and most reasonable terms; also a large stock on hand for Sale or Hire.

R. J. T. having enlarged his premises, has now greater facilities for HOUSING BOATS, and executing all orders entrusted to him.

Builder of the "Rob Roy" and "Nautilus" Canoes, with all the latest improvements.

GENTLEMEN'S BOATS TAKEN CARE OF,

With the Accommodation of Dressing Room.

ORDERS BY POST PUNCTUALLY ATTENDED TO.

Patrons.—EARL CAIRNS, LEOPOLD DE ROTHSCHILD, Esq., &c.

F. G. MAYNARD,

Boat Builder,

DEVONSHIRE BOAT HOUSE,

GROVE PARK, CHISWICK.

Ten Minutes Walk from Kew Bridge and Gunnersbury Stations, and Three Minutes' Walk from Chiswick Station, Grove Park.

SPECIALITIES.

MAHOGANY or OAK CENTRE BOARD SAILING GIGS, with all the most modern improvements, fully rigged, and provided with Matting, Cushion, Pair of Sculls, Boat Hook, &c., 15 ft. long, 5 ft. Beam, **£35.**

SAILING AND PADDLING CANOES from **£10** upwards, according to plans agreed upon, and fittings supplied.

SKIFFS AND GIGS built in either Mahogany or Oak, with Cane Back Rail, Cushions, Mats, Oars, Sculls, Boat Hooks, & everything complete at 25s. per foot.

BOATS HOUSED AND LET.

CUTTERS, SCHOONERS, BRIGS, BLOCKS, DEADEYES, WHEELS, FLAGS, STANCHIONS, CANNON, &c.

Fittings for Model Ships (List Free.)

MODEL STEAM ENGINES,

CYLINDERS, PUMPS, STEAM AND WATER GAUGES, ECCENTRICS, STEAM TAPS, &c., and all the separate Parts.

CHEMICAL CHESTS, MAGIC LANTERNS, BALLOONS, TELESCOPES, MICROSCOPES, SCIENTIFIC NOVELTIES.

STEVEN'S MODEL DOCKYARD, 22, ALDGATE, LONDON.

Send 3d. for Illustrated Catalogue, 100 Engravings.

NEW CATALOGUE AND TIDE TABLE, POST FREE ON DEMAND.

NORIE & WILSON'S

Illustrated Catalogue,

Post Free on Demand.

ONLY ADDRESS:

156, MINORIES, LONDON, E.C.,

Opposite the Aldgate Metropolitan Railway Station.

A NEW EDITION OF

A MANUAL OF

YACHT & BOAT SAILING,

By DIXON KEMP.

3rd Edition, much Enlarged,

25s.

FORE & AFT SEAMANSHIP

FOR

YACHTSMEN,

WITH NAMES OF

ROPES, SPARS & SAILS

IN A

CUTTER, YAWL, OR SCHOONER.

1s., Post Free **13 Stamps.**

THE

Corinthian Yachtsman,

OR

Hints on Yachting,

With Illustrations, handsomely bound in Cloth.

4s., Post Free **4s. 3d.**

THE

PRACTICAL GUIDE

TO MARINE STEAM MACHINERY,

A Handbook for the Owners of

STEAM YACHTS & LAUNCHES,

4s., Post Free **4s. 3d.**

THE

YACHTSMAN'S HANDY BOOK,

AN EASY GUIDE TO

Navigation, Seamanship, International Code of Signals, &c.,

3s. 6d., Post Free **3s. 9d.**

HOW TO MAKE

KNOTS, BENDS, AND SPLICES

AS USED AT SEA,

Fully Illustrated,

1s., Post Free **13 Stamps.**

A NEW LIST OF PHOTOGRAPHIC PORTRAITS OF YACHTS, NOW READY.

BOOKS INTERESTING TO YACHTSMEN.

The Yachtsman's Handy Book;

NAVIGATION, NAUTICAL ASTRONOMY, LOG BOOK AND HOW TO KEEP IT, CHART, SEXTANT, IRON YACHTS' COMPASSES, INTERNATIONAL (COMMERCIAL) CODE OF SIGNALS, FORE & AFT SEAMANSHIP, &c., &c.

Useful to all Yachtsmen, whether intending to work up for a Certificate, or only desirous of understanding the Chart and Instrument work of a Coasting Voyage.

By W. H. ROSSER. PRICE 3s. 6d.

The Corinthian Yachtsman,

OR

HINTS ON YACHTING.

By TYRREL E. BIDDLE.

PRICE 4s., Post Free 4s. 3d.

Fore and Aft Seamanship for Yachtsmen,

WITH NAMES OF

ROPES, SPARS & SAILS,

IN A

CUTTER, YAWL, OR SCHOONER.

PRICE 2s.

Biddle's Model Yacht Building and Sailing;

A Treatise on the Construction, Rigging and Handling of Model Yachts, Ships and Steamers; with Remarks on Cruising and Racing Yachts, and the Management of Open Boats; also Lines for a Racing Cutter, suitable for a 5 to 20 tonner. TYRREL E. BIDDLE.

Illustrated with Woodblocks and Plates, PRICE 5s.

How to Make Knots, Bends, and Splices,

AS USED AT SEA.

FULLY ILLUSTRATED, 1s.

The Stars and Constellations,

HOW AND WHEN TO FIND AND TELL THEM;

WITH FOUR LARGE MAPS OF STARS.

By W. H. ROSSER. PRICE 5s.

Modern Wildfowling,

BY WILDFOWLER,

PRICE 21s.

BOOKS INTERESTING TO YACHTSMEN—*Continued.*	s.	d.
Yacht Designing. Dixon Kemp	63	0
A Manual of Yacht and Boat Sailing. By Dixon Kemp.	25	0
Yachts and Yachting. Vanderdecken 21/. **The Yacht Sailor**	7	6
The Sailing Boat and Management of Yachts. Folkard	14	0
Practical Boat Sailing and Building	7	6
War Waves and Wanderings, a Cruise in the "Lancashire Witch." 2 vols.	24	0
Hunt's Yacht List with Racing Flags	6	0
Varieties of Sailing Vessels, &c., and Mariner's Compass	1	0
Sailor's Pocket Book ....7/6. **Book of Knots**	2	6
Flag Book of all Nations. Splendid work, published at £5 5s....	30	0
Names of Yachts, &c., explained, 5/. Yachting Tales, 2/ and	4	0
Yachts' Jibs. How to make a new Jib that stands flat	2	0
The Sunbeam's Voyage. Mrs. Brassey	7	6
Norway. Yachting Voyage to Hardanger Fjord, with Illustrations	7	6
Shooting, Sea Fishing, and Yachting Trips. 2 vols. 21/., used	10	6
Ditto, 2 vols., 2nd series 21/., used 10/6; ditto 3rd series 21/., used	10	6
Under the Red Ensign, a Guide to Boys on Going to Sea ... 1/. &	2	0
Sport in Many Lands. By the old "Shekarry."	30	0
Sea Fishing—Wilcocks...12 6. **The Wildfowler.** Folkard	15	0
Deep Sea Fishing and Fishing Boats. Holdsworth.	21	0
Griffin, Ahoy! a Mediterranean Cruise ....15/-, used	7	6
Mediterranean, Winter and Spring on Shores of	12	6
The Mediterranean, Illustrated	15	0
Bay of Biscay, Cruise. Burrows. A Portfolio of Sketches, &c. ...	105	0
Through France and Belgium by River and Canal, in the Steam Yacht "Ytene." Moens, 15/. Second-hand copies.....	7	6
Cruise of the "Widgeon," 10-ton Yawl, Swanage to Hamburg by Dutch Canals, Zuyder Zee, Elbe. C. E. Robinson.	9	0
Through Holland. C. W. Wood. 12/. ....used	7	6
"Orion," or How I came to sail alone in a 19-ton Yacht. McMullen.	3	6
Cruise of the "Procyon." McMullen. 3/6. **Cruise of the "Elena"**	1	6
Cruise of the "Silver Cloud;" Dundee to France and Back	2	6
Cruise of the "Kate;" a Single Handed Voyage Round England	3	6
Yachting in Arctic Seas. J. Lamont, 18/. Second-hand copies...	12	0
Yachtsman's Holidays, or Cruising in West Highlands	5	0
Letters from High Latitudes. Lord Dufferin.	7	6
Out of the World, or Life in St. Kilda	2	6
Two Year's before the Mast...1/. Two Year's Abaft the Mast	7	6
The Voyage Alone in the Yawl "Rob Roy"	5	0
"Rob Roy" on the Baltic. Canoe Cruise	2	6
Norway, Sketches of Life, Scenery, and Sport in	6	0
Hints on Shore Shooting, Skinning and Preserving Birds	3	6
Yachting Album, containing 12 Portraits of Celebrated Yachts	63	0
West India Pickles, or Cruise of the "Josephine"	6	0
Starboard and Port; American Yacht Cruise	8	6
Tom Cringles Log.....2/6. **Cruise of the "Midge."**...	2	0
Norie's Navigation with Tables 16s. Daily Assistant	5	0
Brickwood's Rowing and Training	5	0
The Bethel Flag; or Sermons to Seamen. By R. Philip, D.D.	3	0

JUST PUBLISHED,

Price 4s. Post Free 4s. 4d.

THE

CORINTHIAN YACHTSMAN,

OR

HINTS ON YACHTING.

CONTENTS.

Chapter 1.—Yachting as a National Sport.—Antiquity of Pleasure Sailing.—Importance of Encouraging a Love for Aquatics among an Island Population.—Rise and Progress of Yachting.

Chapter 2.—Progress of Naval Architecture.—Different Types of Yachts.—Effects of the Tonnage Laws on the Build of Racing Craft, &c.,

Chapter 3.- Buying and Building.—A Tour Round the Different Builders Yards.—How to Choose a Yacht.—Racers and Cruisers.

Chapter 4.—Concluding a Purchase.—Fitting Out.—Reeving Gear.—Bending Sails, &c.

Chapter 5.—Yachts' Boats.—Laying Down Moorings.—Picking a Crew.

Chapter 6.—Navigation.—Nautical Instruments.—Provisioning for a Cruise.

Chapter 7.—Preparing to Start.—Casting off Moorings.—Making Sail.—Tide Work.—A Squall.—Bringing up.

Chapter 8.- Handling Yachts.—The Cutter.—The Yawl.—The Schooner.—Remarks on Other Rigs.

Chapter 9.—Extended Cruises.—Places within the scope of the Corinthian Yachtsman.—Getting on Shore.—Pleasures of Yachting.—Marine Sketching.

Chapter 10.—Racing.—Preparations.—Taking up a Berth.—Flying Starts.—The Weather Gauge.—Observance of Rules.—Rounding Marks.—Carrying on.—Protests.—Balloon Sails.

C. WILSON, LATE NORIE & WILSON,

PUBLISHER OF CHARTS AND NAUTICAL WORKS,

AT THE NAVIGATION WAREHOUSE AND NAVAL ACADEMY,

156, MINORIES, E.C.

And of all Booksellers.

JUST PUBLISHED,

PRICE FOUR SHILLINGS.

THE PRACTICAL GUIDE

TO THE USE OF

MARINE STEAM MACHINERY,

AND

INTERNAL MANAGEMENT

OF

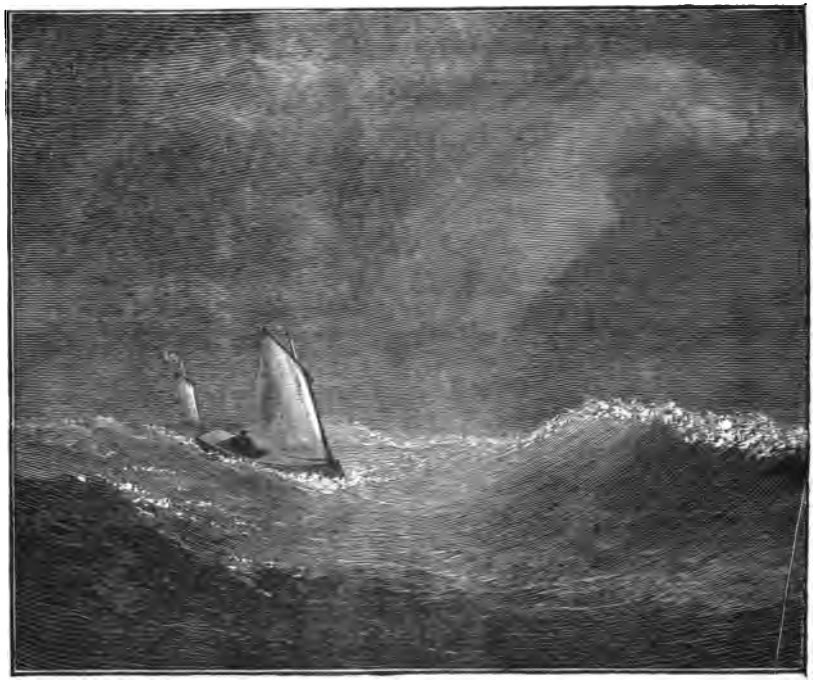
SMALL STEAMERS,

STEAM YACHTS & STEAM LAUNCHES.

By JAMES DONALDSON, Engineer,

Author of "Drawing and Rough Sketching for Marine Engineers." "The Engineers' Annual," Etc.

London:
CHARLES WILSON Late NORIE & WILSON,
PUBLISHER OF CHARTS AND NAUTICAL WORKS, &c.,
AT THE NAVIGATION WAREHOUSE AND NAVAL ACADEMY,
156, MINORIES.
AND OF ALL NAUTICAL BOOKSELLERS.



"AN EXPERIMENTAL CRUISE IN THE PROCYON 7 TON LUGGER,"

By Mr. R. T. Mc MULLEN.

Price 3s. 6d. Post free 3s. 9d.

OPINIONS OF THE PRESS.

"The Author communicates in a very agreeable manner a large amount of information about matters in which most Englishmen are interested."—*Leeds Mercury.*

"The Author's remarks on 'Collisions at Sea' evince a careful consideration of the subject."—*St. James's Gazette.*

"The author has a straightforward way of telling what a practical yachtsman would be curious to know, which, apart from the intrinsic merits of his achievements, will render his book useful."—*Daily News.*

"It is not likely that many will be madly anxious to sail alone after reading Mr. Mc Mullen's books; but all salt-water enthusiasts will confess to a deep feeling of interest in their perusal."—*The Field.*

"Mr. Mc Mullen the narrator of his adventurous cruise, known as the author of 'Orion' and 'Down Channel,' is a thorough sailor, and he cannot but talk and write as one."—*Daily Telegraph.*

"The tale told is simple, and, to those even whose pleasures are procurable in less boisterous ways, interesting. The author's practical suggestions made at the close of his volume for the prevention of those terrible catastrophes. collisions at sea, are full of common sense, and merit the serious consideration of those whose duty it is to legislate on the subject, and we strongly recommend the perusal of his 'Experimental Cruise' to all who may take an interest in seafaring."—*Morning Post.*

"Mr. Mc Mullen, as the author of 'Down Channel' and 'Orion,' has become as popular and as widely read on this side the Atlantic as in Europe, and his new book will be appreciated."—*Forest and Stream, New York.*

By the same Author,

"THE CRUISE OF THE ORION,"

Price 2s. 6d. Post free 2s. 9d.

NORIE & WILSON, Nautical Publishers,

156, MINORIES, LONDON, E.C.

The Celebrated 50s. and 63s.

"NORIE & WILSON" DAY OR NIGHT MARINE BINOCULAR GLASSES.

With embossed Name, NORIE & WILSON, LONDON, *on each eye piece.*

With LARGE EYE PIECES and *finest lenses of greatest power,* covered with Morocco Leather in Sling Leather Case.

FIRST QUALITY,

£3 3s.

WITH LARGE EYE PIECES, covered in Morocco, and in a Sling Leather Case. A strong useful Glass.

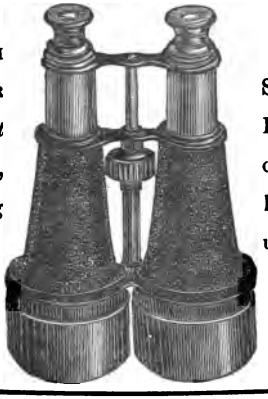
SECOND QUALITY,

£2 10s.

In TWO PATTERNS, HIGH SHAPE AND MEDIUM OR EMPEROR PATTERN, *finest lenses of greatest power,* Morocco coverings, Sling Leather Cases.

FIRST QUALITY,

£3 3s.



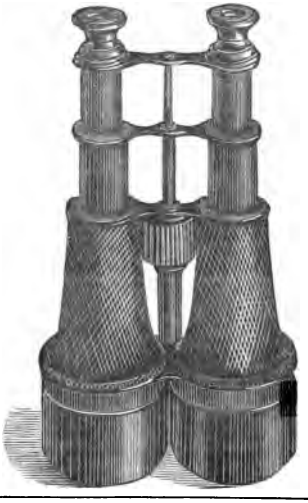
In TWO PATTERNS, HIGH SHAPE AND MEDIUM OR EMPEROR PATTERN, covered in Morocco, Sling Leather Cases. Strong useful Glasses.

SECOND QUALITY,

£2 10s.

SPECIAL GLASS FOR LONG DISTANCES, with *Double Draw,* both Draws twist out, specially adapted for Long Distances at Sea, strongly made and fitted with best Lenses of the greatest power, and large Object Glass, and covered with Morocco Leather, in Best Sling Leather Case.

£4 4s.



BEST NAVY TELESCOPES, Taper Pattern, Leather Body, large Object Glass, and best Lenses, —2 feet with spray shade,

63s.;

18 inches, with ditto,

50s.;

15 inches,

31s. 6d.

The above will be sent, securely packed and carriage free, on receipt of P.O. Order. They are *the best glasses that can be made,* and always highly spoken of.

Convertible Tricolour Lamp.

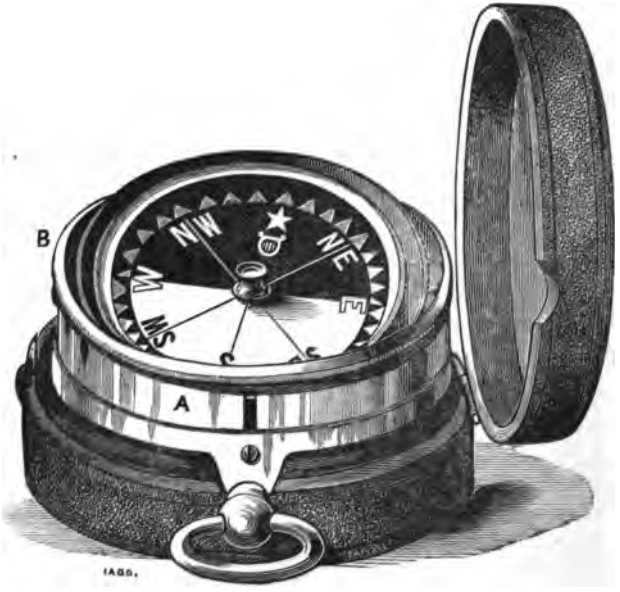
Anchor, Port, and Starboard Lamps in one Lantern, useful for small Yachts and open Boats, &c.

Small size in copper ... 37s. 6d.
Ditto tin japanned ... 20s. 0d.

Full size in copper ... 50s. 0d.
Ditto tin japanned ... 27s. 6d.

NEW COLLAPSIBLE GIMBALLED POCKET COMPASS,

NICKEL SILVERED, AND IN LEATHER CASE.



The action is telescopic, by taking hold of the rim (B) draw out the nner bowl (A), and the Compass is then set free.

Price with Card Dial, Singer's patent, of 1¼ inches, **12s.**, or 3½ inches, **30s.**

Or with Mother-of-Pearl Dial of 1¼ inches, **17s. 6d.**, 3½ inches, **42s.**

YACHT OR BOAT BINNACLES.

IMPROVED LIFE-BOAT BINNACLE,

WITH LIQUID COMPASS.

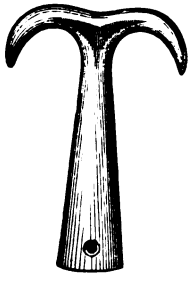
No. 1, with 3½ inch Compass Card, stands 10 inches high and is 6 inches square . . . . . **£4 10s. 0d.**

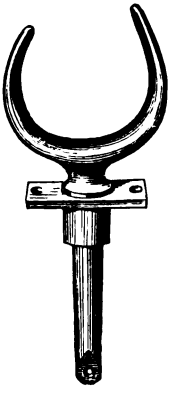
No. 2, with 4¼ inch Compass Card, stands 11 inches high, and is 7 inches square . . . . . **£5 10s. 0d.**

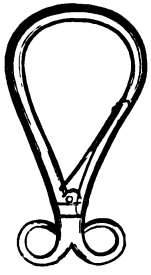
With extra finish, glass in front to open for cleaning, &c.

Teak Binnacle, Compass and Lamp complete, similar design to above, Compass has double needles and Bell Cap. These Binnacles have been designed as the cheapest, strongest, and best for open boats and very small yachts . . . . . **£2 10s. 0d.**

Round Top, japanned Brass Boat Binnacle, with steady Card . . **35s.**







BRASS ROWLOCKS, best make; also **BOAT HOOKS** and **GALVANIZED IRON RACING SAIL HOOKS.**

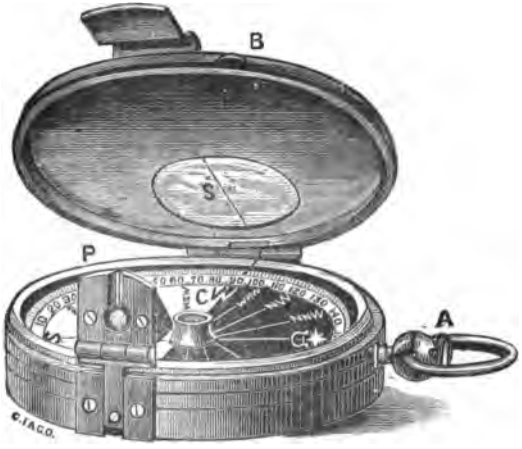
CABIN AND BOAT COMPASSES,

IN EVERY VARIETY.

Yachts' Compasses Cleaned, Needles Retouched and Tested.

ROUND BRASS BOAT COMPASSES, gimballed, 2½-inch diameter **12s. 6d.**, 3-inch **16s.**, 3½-inch **21s.** Fitted with ordinary or Singer's Patent Card.

BRASS COMPASSES, 2¾-in., **5s. 6d.**; 3½ in., **6s. 6d.**; 4-in., **7s. 6d.**



Prismatic Pocket Azimuth Compass, with Pearl Dial, **35s.**; or with Card Dial, **42s.**

Pocket Compasses in Morocco cases **5s.** and **7s. 6d.**, or in Nickel Silver, lid with hinge **7s. 6d.**; or like a Watch, Gilt or Nickel Silver, **15s.**

SMALL BRASS COMPASSES from **2s. 6d.**, **3s. 6d.**, **5s.**, &c.

BOAT AND STEERING COMPASSES.

Boat Compasses, with Brass Bowls and Wooden Boxes, from 10s. 6d.

Steering Compasses, either dry or liquid, fitted with Double Needles and with moveable Azimuth Ring and Sights, if required.

The following French Publications can be obtained at Norie's Nautical Warehouse, 156, Minories, London:—

ANNUAIRE DU YACHT, 1880, containing all information relating to the Navigation of the interior of France as regards Rivers and Canals, &c., 2s.
MAP AND CHART OF THE SEINE, from Rouen to Paris, bound in cloth 3s. 6d.
MAP OF RIVERS AND CANALS IN FRANCE ..... 9s. 6d.
Do. Do. OF BELGIUM ..... 10s. 6d.

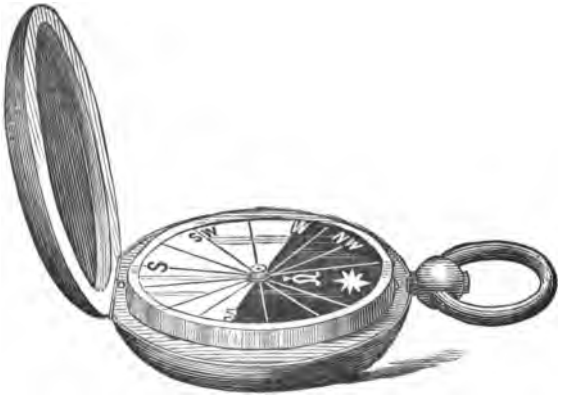
YACHTING JEWELLERY.

STEERING WHEELS, 18-carat gold 84s. & 70s.; 15-carat 55s. LIFE BUOYS, 18-carat 55s.; 15-carat 50s.; BLOCK, 18-carat 95s.; 15-carat 75s.; HUNTING CASED, 18-carat 84s.; 15-carat 75s.; silver 30s.; FETTER LINK, 18-carat 40s.; 15-carat 35s.; 10-carat 30s.; silver 20s.; BELCHER EDGE, 42s., 37s. 6d., 30s.; silver 15s.

PLAIN BAND, 25s., 20s., 17s. 6d.; silver 14s

MODEL PATENT LOG, 30s.

All kinds of charms are fitted with Pebble Compasses; Steering Wheels and Life Buoys, can have name of Yacht and Initial Letters of Club engraved.



SILVER COMPASSES 1s. 6d. 2s. 6d. & 3s. 6d.; gilt from 6d., 1s. 6d., 2s. 6d.
HUNTING CASED NICKEL SILVER COMPASS 10s. 6d.
ENAMELLED RACING FLAG, or CLUB BURGEE, on 18-carat gold as scarf pin, 45s.
ENGRAVED, HAND PAINTED CRYSTALS, Racing Flag or Club Burgee, gold mounted, pins 25s.; Scarf Rings, 35s.; Solitaires, 25s. per pair.

FIG. 1.

FOG HORNS, SPEAKING TRUMPETS, &c.

The "Vicar of Bray" New Mechanical Fog Horn, used by foot and hands, used in large Yachts, £1 11s. 6d.

The "Little Squeaker," £1 1s., very powerful, used with the hands only, suitable for Yachts from 5 tons.

Brass Mouth Fog Horns, Fig. 1, and Speaking Trumpets, Fig. 2, 3s. 6d., 4s. 6d., 5s., 6s.;

Japanned Tin ditto, 2s. 6d. & 3s.

Galvanized Iron, 3s. 6d. & 4s. 6d.

Bellows Fog Horn ... ... 12s. 6d.

Mechanical Sentinel Fog Horn in Brass, £2 2s.

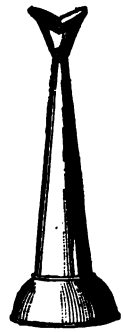


FIG. 2.

YACHTING KNIVES,

In Buffalo Horn, containing Knife, Corkscrew, and Marling Spike, 5s.; or without Corkscrew, in Buffalo Horn, 3s.

YACHTING PICTURES & PHOTOGRAPHS.

PORTRAITS OF YACHTS, in Oils and Water Colours, by Mr. T. G. Dutton, who has for many years executed commissions from the principal Yacht Owners. Prices, large size, £8 8s., £10 10s. and upwards.

Small Portraits at £4 4s., to £6 6s.

Mr. Dutton still solicits orders for executing Lithographic Portraits of Sailing and Steam Yachts and will be happy to quote prices for 100 copies of Portraits, either large or small size. His series of Lithographs are well-known; the following are extracts from reviews of his Portraits.

> "The Portraits of the yachts are so life-like—a yacht, we believe can be life-like—that one can fancy that they are doing just what Mr. Lyle, in his graphic way, says they are."—*Field*,
>
> "They are simply faultless, both in drawing and colour."—*Land & Water*.

WATER COLOUR DRAWINGS and SKETCHES of MARINE SUBJECTS, either to order, or Paintings can be submitted for selection. Several of Mr. Dutton's and Mr. R. J. Biddle's Marine Paintings are usually on view at Norie's Nautical Warehouse, 156, Minories, London; the names of these gentlemen are sufficient guarantee for truthful portraiture, &c.

We have been recently favoured with orders to execute Portraits of the "Miranda," sch., "Marchesa," s., "Meteor," s.; "Aldegonda," 65 ton yawl; "Sylvia," cut., and "Maggie," 15 ton cutter; "Eva," cutter; "Gulnare," now "Aldegonda," schooner; "Owl," "Queen Mary," and several Racing Subjects.

New List of Photographic Portraits of Sailing and Steam Yachts.

TO YACHTSMEN ABROAD, &c. REQUIRING SUNDRIES.

The following and any other Yachting Requisites can be shipped to order, or prices quoted on application :—

Atkey's Cooking Apparatus, small £3 15s.; with Baking Oven £5 5s.; with Boiler and Roasting Oven £7 7s.; large Stoves £9 9s. to £12 12s.

Improved Main Sheet Buffers from £3 3s., suitable up to 10 tons; Ratchet Windlass for small Yachts with Wrought Iron Bitts from £3 3s., or for Wood Bitts £2 10s.

NEW BOOKS.

NORIE & WILSON, 156, MINORIES, LONDON.

THE MARINE STEAM ENGINE, with numerous Diagrams.
By R. SENNETT.
Price 21s.

THE FLAGS and FUNNELS of the Steamship Owners of the United Kingdom. Edited by the Committee of Lloyd's.
Price 21s.

A most useful and interesting Book to all engaged in seafaring pursuits, or who reside by the seaside.

FLOTSAM AND JETSAM, by T. G. BOWLES, Master Mariner. A capital Yachting Book ... ... **7s. 6d.**

MY WATCH BELOW, by CLARKE RUSSELL ... ... **2s. 6d.**

NEW INSTRUMENTS.

THE FISHERMAN'S ANEROID BAROMETER, the same make of instrument as issued by the Royal National Life Boat Institution; a strong, useful, well-made Barometer ... **30s.**

NORIE & WILSON'S NEW BINOCULAR GLASSES with BENDING BAR to suit the eyes, and thus ensure a perfectly clear vision. With 12 lenses, a very powerful long distance day glass **63s.**

With 6 Lenses, a Day and Night Glass, being sufficiently powerful for use at night, also for day, when being constantly used, where a more powerful glass might injure the eyesight ... ... **50s.**

As supplied to Captains and Officers of the Principal Steam Ship Lines trading out of the Port of London. All Binocular Glasses with "NORIE & WILSON, London," on each eye piece, are justly favourites, as they are London made, very strong, and have the best lenses, and are very superior to the common French made glasses usually offered for sale.

NAVY TELESCOPE, 2 ft. long when closed, with single draw, and fitted with sun shade, picked lenses ... ... **£3 10s.**

DAY AND NIGHT TELESCOPE, 2 ft. long, when closed, with single draw, and fitted with sun shade, picked lenses... **£3 3s.**

These are favourite Telescopes with Captains and Officers of the Mercantile Marine. The name "NORIE & WILSON, London," being on *best* instruments *only* is sufficient guarantee that these Telescopes are the finest that can be manufactured.

Catalogues of Charts, Books and Instruments Post Free on demand.

18 TONS. CUTTER, very strongly built, makes up 3 berths, and has w.c. **£300.** Apply to G. WILSON. [No. 381.

50 TONS. STEAM YACHT, iron, compound engines, does 10 knots. **£2,100.** Apply to G. WILSON. [No. 216.

70 TONS. STEAM YACHT, of iron, classed at Lloyds', compound engines. Apply to G. WILSON. [No. 217.

9 TONS. CUTTER, splendid sea boat, just had new decks. **£110.** or exchange for Steam Launch. G. WILSON. [No. 302.

25 TONS. YAWL, length 51 ft. 6 in., beam 11 ft. 3 in., draft of water, 6 ft. 1 in., coppered to bends ; 36 cwt. lead ; new mahogany cabin top, height under 5 ft. 9 in.; has saloon, ladies' and owner's cabins, and 2 w. c's. An old vessel but believed sound. Cheap. G. WILSON. [No. 45.

33 TONS. YAWL, a roomy, comfortable cruiser. New sails. **£300.** Apply to G. WILSON. [No. 425.

5 TONS. CUTTER, built 1870, lead ballast, fast, good cabin and forecastle. **£100.** Apply to G. WILSON. [No. 426.

9 TONS. YAWL, 3 tons lead, best part new canvas. **£105.** Apply to G. WILSON. [No. 427.

3 TONS. RACING CUTTER, built 1881, good outfit. **£210.** Apply to G. WILSON. [No. 429.

3 TONS. RACING CUTTER, built 1880, all lead ballast, **£250.** Apply to G. WILSON. [No. 430.

8 TONS. CUTTER, built 1878, fast, light draft cruiser. **£250,** or offer. Apply to G. WILSON. [No. 432.

7 TONS. CUTTER, built 1881, 5 tons lead, winner of numerous prizes. **£250.** Apply to G. WILSON. [No. 433.

9 TONS. CUTTER, built 1876, throughly overhauled 1882. **£250.** Apply to G. WILSON. [No. 434.

20 TONS. CUTTER, modern, lead ballast, beautifully fitted, powerful cruiser. **£650.** Apply to G. WILSON. [No. 455.

8 TONS. CUTTER, built 1881, about 6 tons lead, all new racing sails 1882, another suit 1881 ; fitted with w.c. **£400.** G. WILSON. [No. 457.

18 TONS. CUTTER, built 1861, new sails 1882, besides £150 on improvements. **£300.** Apply to G. WILSON. [No. 458.

TWO 5 TON CUTTERS, carvel. **£50.** Another clench built, with centre-board. **£50.** [No. .

STEAM LAUNCHES.

Several for Sale, Wood, Iron, or Steel, of various lengths, suitable for Pleasure or Business Purposes.

CHAMPAGNE.

HENRI PÈRE ET FILS

FIRST QUALITY, EXTRA DRY,

48/- per Dozen Bottles.

52/- per 2 Dozen Half-Bottles.

In Cases, ready to be sent by Rail to Yacht, on receipt of P.O.O.

Offices—72, MARK LANE, E.C.

ROUTES From the
FENCHURCH STREET,
MANSION HOUSE AND
LIVERPOOL ST G.E.R.
RAILWAY STATIONS,
TO
NORIE'S
NAUTICAL WAREHOUSE,
156, MINORIES,
LONDON, E.C.
NORIE'S
NAUTICAL ACADEMY
Conducted by Mr MARTIN,
also Removed from
157, LEADENHALL St
TO
156, MINORIES,
LONDON, E.C.
Finsbury Circus
London Wall
Moorgate Street
Liverpool St Station
GT EASTERN & N.L. LONDON Sts
Old Broad St
BISHOPSGATE St
HOUNDSDITCH
St Mary Axe
ALDGATE STATION
Whitechapel Road
BANK
R. EXCHANGE
Threadneedle St
Old Premises
CHEAPSIDE
POULTRY
CORNHILL
LEADENHALL St
ALDGATE
MINORIES
MANSION HOUSE
Watling Street
Lombard St
King William St
GRACECHURCH St
Lime Street
Billiter St
NEW PREMISES
FENCHURCH STREET
FENCHURCH St STATION
Queen Victoria St
MANSION HO. STATION
CANNON STREET
Upper Thames Street
Southwark Bridge
CANNON St STATION
Eastcheap
Mark Lane
MINORIES GOODS STATION
Fish Street Hill
Monument
Tower Street
Trinity Square
Lower Billingsgate
CUSTOM HOUSE
Thames St
Postern Row
Tower Hill
Tower of London
St Kath's Dock House
LONDON BRIDGE